JUN 19 1920

The American Journal of

CLINICAL MEDICINE

Dependable Therapeutic Fact for Daily Use

FEBRUARY MCMXIX

The Influenza Epidemic

IN THIS number of the CLINICAL MEDICINE many physicians present their views of the influenza problem. Study the various articles well, Doctor. The epidemic is by no means over.

About that renewal subscription—may we have your check in the next mail? Two dollars for one year; five dollars for three years. Thank you.

In the **March Issue,** a second series of articles on Mental Diseases, by Doctor Duval, will start. Also, there will be one of Doctor Benedict's scholarly studies on Food Economics.

Trade Mark of
The Society of Chemical
Industry in Basle,
Switzerland

The premier digitalis

is the digitalis which gives you
results when others have failed

DIGIFOLINE "CIBA"

will stand this test

according to the actual experiences
of physicians

Tablets *for internal use* *Ampules* *for subcutaneous and intravenous use*

Physiologically Standardized

A. KLIPSTEIN & COMPANY
New York

Liquid Peptonoids with Creosote

acts promptly as an
Expectorant and Bronchial Sedative
in
Persistent, Hang-on
Winter and Automobile Coughs

It is Nutritive, Palatable and does not Disturb Digestion
Has merit as an Intestinal Anti-Septic
SAMPLES ON REQUEST

THE ARLINGTON CHEMICAL COMPANY
YONKERS, NEW YORK

THOROUGH DISINFECTION

is now a necessity. Special precaution should be taken to protect your health.

STOP THE SPREAD OF INFLUENZA germs now prevalent.

Create a clean healthy atmosphere by the constant and daily use of the reliable

Sold everywhere in two sizes.

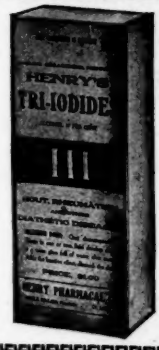
Is absolutely odorless, yet strong and effective.

Platt's Chlorides

The Odorless Disinfectant

(Trade-Mark Registered)

Write for sample and booklet to the manufacturers, HENRY B. PLATT CO., 41 Cliff St., N. Y.



TRI-IODIDES (HENRY'S)

LIQUOR-SALI-IODIDES—8 oz. Bottles, Price $1.50

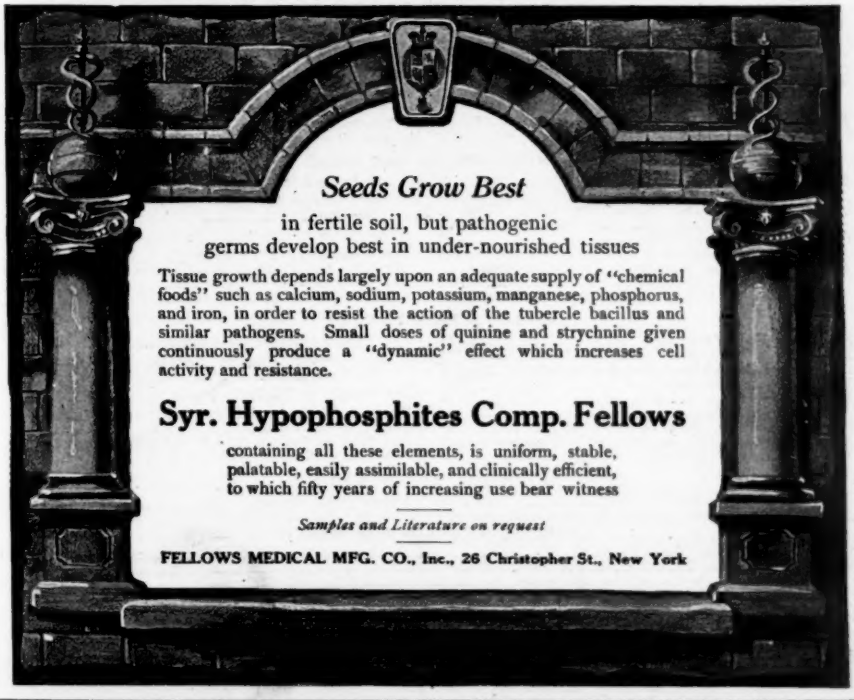
Valuable in acute or chronic diseases of the bones and joints, rheumatism, gout, syphilitic blood taint, eczema, psoriasis and all dermic disorders in which there is an underlying blood impurity.

SPECIAL NOTICE TO PHYSICIANS.

We will send an Original Bottle, $1.50 size, *Tri-Iodides* to any Physician who will send us 30c. Express Charges on same. Send Coin Stamps, Express or Money Order.

WRITE FOR BOOKLET.

Henry Pharmacal Co., *121 Vine Street, ST. LOUIS, MO.*


Seeds Grow Best
in fertile soil, but pathogenic
germs develop best in under-nourished tissues
Tissue growth depends largely upon an adequate supply of "chemical foods" such as calcium, sodium, potassium, manganese, phosphorus, and iron, in order to resist the action of the tubercle bacillus and similar pathogens. Small doses of quinine and strychnine given continuously produce a "dynamic" effect which increases cell activity and resistance.
Syr. Hypophosphites Comp. Fellows
containing all these elements, is uniform, stable, palatable, easily assimilable, and clinically efficient, to which fifty years of increasing use bear witness
Samples and Literature on request
FELLOWS MEDICAL MFG. CO., Inc., 26 Christopher St., New York

The American Journal of Clinical Medicine

A MONTHLY JOURNAL
DEVOTED TO ACCURACY, DEPENDABILITY AND HONESTY IN EVERY DEPARTMENT OF MEDICINE AND TO THE SAFEGUARDING OF THE DOCTOR

GENERAL EDITORIAL STAFF:
W. C. ABBOTT A. S. BURDICK RICHARD SLEE H. J. ACHARD

PUBLISHED BY THE AMERICAN JOURNAL OF CLINICAL MEDICINE, Inc.

ENTERED AS SECOND-CLASS MATTER MARCH 31, 1906, AT THE POST OFFICE AT CHICAGO, ILL., UNDER ACT OF MARCH 3, 1879.

Subscription Rates.—To any part of the United States, Canada and Mexico $2.00 per year, postage free, single copies twenty cents; to all other countries an additional charge of $1.00 is made for postage. N. B.—Make all checks and remittances for subscriptions and renewals payable to THE AMERICAN JOURNAL OF CLINICAL MEDICINE, adding 10 cents for exchange. **Three years for five dollars.**

Address Changes.—Notify us promptly of any change of address mentioning both old and new addresses. We cannot hold ourselves responsible for copies of CLINICAL MEDICINE sent to former addresses, unless we are notified as above. If you fail to receive your copies of CLINICAL MEDICINE notify us at once, and we will supply you if we can. Complaints covering more than three months usually cannot be honored.

Discontinuances and Renewals.—According to Post-Office regulations, subscriptions must be expressly renewed within one year of the term for which they are paid. When this paragraph is marked and the journal comes to you in an "unusual wrapper," it means that your subscription expires with that issue and is a request for you to send in your renewal at once. Renewal blank is enclosed for this purpose. Kindly always renew promptly.

Warning.—Pay no money to an agent unless he presents a letter showing authority for making collection.

Address.—THE AMERICAN JOURNAL OF CLINICAL MEDICINE, 4737 Ravenswood Ave., Chicago, Ill.

The Indian Alkaloidal Company, sole agents for India, Burma and Ceylon.

Vol. 26, No. 2 **February, 1919**

EDITORIAL DEPARTMENT

Progress or Retrogression? 85
The Influenza Toll of Death 86
Vaccination Against Influenza 86
The Index 87
Address of "The Medical Review of Reviews" 87
Emetine In Hemorrhage 87
"While We Sleep" 87
War-Department Commission on Training-Camp Activities 88
The Training of Home Nurses 88
Clear Out the Cobwebs 89
The Stimulating Effect of Praise 90
Those Liberty-Bond Payments 90
Death of Dr. A. A. Nefe 91
Honor for Dr. Beverly Robinson 91
Let's Talk It Over 91
Therapeutic Optimism 92
"A Registration Fee For Physicians" 93

LEADING ARTICLES

The Treatment of Infected Wounds With Dichloramine-T. BAKER 95
Procaine-Anesthesia For Surgical and Dental Operations. MCMECHAN 105
Intestinal Disinfection With Chlorazene. CARNOT AND BONDOUY 111
After Thirty Years—X. RITTENHOUSE 116
The Treatment of Chronic Diseases. BUTLER 120
Life and Psychophysiology. HASWELL 123

WHAT OTHERS ARE DOING

New Treatment For Vincent's Angina 127
An "Abortive" Treatment For Influenza 127
Action of Chlorinated Antiseptics Upon Blood Clots 128
Causes of Death From Salvarsan 128
Emetine in Influenza 128
Hyoscine-Morphine Anesthesia in Goiter Operations 128
Transmission by Cow's Milk of B. Diphtheriae 129
A von-Pirquet Survey 129
Nurses Training School at a Missouri State Hospital 130
Influenza in Switzerland 130
The Treatment of Influenza 131
Adrenalin and Pituitary Solution for Asthma 131
The Treatment of Malaria 132
The Prevention of Blindness 132

LET'S TALK IT OVER

Studies on Food Economics 133
Influenza—A "Bump" 135
Is Influenza Caused by Poisoned Atmosphere? 135
Influenza in Guatemala 137
Influenza in Idaho 138
A Specific for Influenza 140
Hyoscine and Morphine in Influenza 141
Sodium Hyposulphite as a "Flu" Remedy 142
Tartar Emetic in Influenza 142
The Phrophylaxis of Influenza 143
A Prophylactic Measure Against The Influenza Epidemic 143
The Origin of "Doughboy" 144
Hospital Work in Palestine 145
The Country-Doctor 146
One Way to Collect An Old Account 148
A Nonsurgical Treatment for Bone Disease 151

AFTER THE WORLD WAR

Letters From France—VI 153
JUST AMONG FRIENDS 157
AMONG THE BOOKS 161
QUERIES 165

SPECIAL ARTICLES FOR MARCH

The Composition of Feces LARRABEE
Meningitis GOLDSTEIN
Optical Diagnosis Versus Digital Diagnosis EVERETTE
Clinical Studies in Mental Disease Dementia Praecox DUVAL
Dietetic Economics, With Reference to Land Utilization BENEDICT
How Uncle Sam Cares for the American Soldier

The American Journal of
CLINICAL MEDICINE
Dependable Therapeutic Fact for Daily Use

Vol. 26, No. 2 February, 1919

Progress or Retrogression?

IN one of the leading medical journals of the country, the following two items were found, which deserve mention. They are as follows:

Argument never settled anything. How calm and collected is the man who has the facts! I "think" doesn't weigh much.

A wise old man was Oliver Ding,
By few words was he moved,
He never would believe a thing
Until it had been proved.

According to this mode of reasoning, it would be futile to attempt any investigation or to deal with any problem whatever "until it has been proved", that is to say, until it has been *definitely* settled. It would be exactly like forbidding Tommy to go into the water until he has learned to swim.

The absurdity of such an attitude is self-evident and, according to its logical conclusion, it precludes any investigation, study, and endeavor looking to progress or improvement. It was the accusers and judges of Galileo that, like the wise old man Oliver Ding, would not believe a thing that had not been absolutely proved. Since, to their own limited minds, the learned Galileo could not offer the proof that the earth journeys around the sun, instead of the reverse, Galileo was forced to recant and to do penance for daring to believe things that had not been "proved". Similarly, the medical leaders of his day refused to accept Harvey's demonstration of the circulation of the blood, denying that it had been proved. The conclusions drawn by Edward Jenner from the results of his observation after inoculating the boy James Phipps, from material obtained from cowpox-pustules from the hands of the dairy-maid Sarah Nelmes, were fiercely combated by the medical leaders of the day, who refused to believe a thing until it had been "proved"; and the same fate was accorded to Servetus, Semmelweis, Holmes, Pasteur, Lister, Koch, and all the rest of "innovators" that dared to strike out independently along new lines of thought and in new directions of practice.

We submit that the man who refuses to consider possibilities, even though they be

not definitely proved, is one of those that remain in a rut all their lives, who are afraid to progress lest they lose themselves in the deep waters of unorthodox teachings; who fear to think independently, preferring the easier and less onerous, if less glorious, part of those that follow well-established leaders.

For our part, while we are not exactly constantly eager for new things, in the manner of the Athenians of old, we can not believe that our own wonderful era has attained and possesses all that is worth knowing. There is so much to be learned, so much to be discovered, that we prefer to maintain an open mind for new things that may be presented to our understanding; tentatively, perhaps, and, before they have been proved. We fully appreciate, that there are many facts that are matters of course today, but, were strange, unproved, and even improbable or impossible but on the yesterday.

The sentiments expressed in the two items introducing this editorial are reactionary in their tendency and injurious to every hope of progress. It is to be deplored that they should have found an approved place in a prominent and leading medical journal.

Every time you spend a nickel, a healthy dollar must work four hundred days to earn that five cents.

THE INFLUENZA TOLL OF DEATH

Although we have grown indifferent to the influenza epidemic, because we have become accustomed to having it with us, we should not forget that this malady still exists and, as a problem, is still unsolved. While the terrific toll of death is less now than during the months of October and November, it still is too large. Between September and January 1, there occurred in Chicago 10,748 deaths from influenza and pneumonia; in New York, 23,622; in Philadelphia, 13,502. In the last week of December, there were 439 deaths from this cause in Chicago.

The exact cause of influenza still is a mystery, but, there are available, as we know, really effective measures and remedies for arresting its spread and preventing complications. Some of these are discussed in this number of CLINICAL MEDICINE. We hope that the symposium upon this topic appearing on other pages, of this issue, will be studied carefully and commented upon freely and frankly by our readers. We shall, undoubtedly, have to struggle with influenza for years, and *now* is the time to learn the lessons which later may save many valuable lives. All the help we can possibly give one another will, still, be too little.

VACCINATION AGAINST INFLUENZA

"Out of 4,212 that were vaccinated, not one man died". This is the report made by Ely, Lloyd, Hitchcock, and Nickson, of the Navy Yard at the Puget Sound Station in the state of Washington. As in other portions of the country, they have been through an influenza-epidemic. As the result of bacteriologic studies, these investigators came to the conclusion that hemolytic streptococci are mainly responsible for influenza and its complications. Accordingly, they prepared a vaccine, and with the results stated.

In the same number of *The Journal of the American Medical Association* in which this report appears, we find the fine report by E. C. Rosenow, of The Mayo Foundation. Using a vaccine consisting of the four types of pneumococci (including a green-producing diplostreptococcus), hemolytic streptococci, staphylococcus aureus, and the influenza-bacillus, Rosenow vaccinated some 28,459 people, of whom 20,792 received three inoculations. Among those receiving these inoculations, there occurred not a single death within a week after the third inoculation; within six weeks after the third inoculation, the percentage of deaths was 0.19; while among 61,753 uninoculated persons of whom records were kept, there were 3.4 percent of deaths.

In commenting upon this report, Doctor Rosenow says: "All but 2 of over 70 physicians that have used the vaccine report that the attacks of influenza, if contracted by the inoculated, are milder and of shorter duration, and that convalescence is more rapid than in the uninoculated."

These are straightforward facts. They may not have been properly "digested", and the conclusions arrived at by the authors may be wrong. Yet, in the light of the character of these men and their

standing as investigators in this special field, who can question the value of their conclusions, deny the value of vaccination, and advise against its use?

Nevertheless, there are those that do this. And, *The Journal of the American Medical Association* comments: "The data presented are simply too inadequate to permit of competent judgment".

THE INDEX

The Index, or table of contents, of contents of CLINICAL MEDICINE for 1918 is being printed at the time this is written and will be ready for distribution in a few days. Doctor, you should have your files of the journal bound, because a set of THE AMERICAN JOURNAL OF CLINICAL MEDICINE constitutes a reference library of great value. Send a postal card indicating your desire to receive a copy of the index and then send your last year's twelve numbers to the binder forthwith. The cost is small; the advantages are great.

If you prefer, you may send your journals to us and we will have them bound for you at the price of $1.50 per volume, you to pay express charges both ways.

ADDRESS OF "THE MEDICAL REVIEW OF REVIEWS"

In an editorial notice published last month, we recommended *The Medical Review of Reviews* to the readers of our journal, but, inadvertently, we stated that the address of this publication was 12 Morris Park West. This was a mistake. *The Medical Review of Reviews* is published at 206 Broadway, New York, and everyone who is interested (and we trust many of our readers are) should write to this address for sample copies.

EMETINE IN HEMORRHAGE

Some two or three years ago, quite a number of articles appeared in this journal regarding the hypodermic injection of emetine-hydrochloride for the purpose of arresting hemorrhage. We are reminded of these articles by a letter just received from our old friend Dr. C. S. Cope, of Detroit, Michigan. Doctor Cope has the honor, we believe, of being the first one in America to try emetine for hemostatic purposes. He did this under peculiar circumstances. His own son had a sudden attack of hemopytsis. It was severe and exhausting. The usual remedies were tried and failed, and the Doctor felt that, unless relief came soon, the boy would die.

It was just then that the postman brought the monthly issue of CLINICAL MEDICINE. Hastily opening the journal, the first thing to meet his eye was an article recounting some French experiences with emetine-hydrochloride injections in hemoptysis. To Doctor Cope, this article seemed like an answer to his fervid prayers for aid. Having in his case a little of the drug in question, he began to administer it without delay, and, to his great joy, the hemorrhage stopped at once, almost as if by magic.

Since then, emetine has been used for arresting hemorrhage in a good many cases. Of course, it has not always succeeded (as no remedy will do), but, it has been effective in a surprisingly large number of instances. Just how this principle acts, no one seems to know exactly; nevertheless, that it does stop bleeding of the oozing type, there is abundance of proof.

This is now ancient history. It records things that occurred "before the war"; still, it also records clinical experiences of the utmost value and which should not be lost sight of. We still believe that every physician should carry with him, for use in emergencies, a few hypodermic tablets of emetine hydrochloride or a few ampules of its solution. We hope that the readers of CLINICAL MEDICINE that have had experience with this drug will be reminded by this little epistle to give us reports about their experience.

REBUFFED

A stranger knocked at a man's door and told of a fortune to be made.

"Um!" said the man. "It appears that considerable effort will be involved."

"Oh, yes," said the stranger, "you will pass many sleepless nights and toilsome days!"

"Um!" said the man. "And who are you,"

"I am called Opportunity."

"Um!" said the man. "You call yourself Opportunity, but you look like hard work to me."

And he slammed the door.—"Pittsburgh Post."

"WHILE WE SLEEP"

The rights and property of the Bayer Company, together with its subsidiaries, was recently sold at auction by the alien-property custodian, Mr. A. Mitchell Palmer. This German-owned chemical manu-

facturing company, the best-known product of which is aspirin, did a business, in 1917, amounting to $5,608,502.51, with net profits of $1,768,566.78. It was sold to the Sterling Products Company, of Wheeling, West Virginia, a "patent-medicine" concern, for $5,310,000.

It is interesting and significant that aspirin (of the Bayer cross) and Cascarets now have a common owner. Can it be possible that the Sterling Products Company picked up the five plus million dollars, required for effecting this purchase, from the laxative tablet that "works while you sleep"?

Hot upon the trail of the preceding item of news comes the statement that the patent-office has cancelled the Bayer-owned trademark of the word "Aspirin."

As long as a man has the courage to stand up on his own two legs and fight, his battle is never lost. But, the minute he admits defeat to himself, his battle is lost, even if the odds are all on his side and the scrap has only begun. —Charles Piez.

WAR-DEPARTMENT COMMISSION ON TRAINING-CAMP ACTIVITIES

From the beginning of the war to September of this year, venereal disease lost for the United States Army 2,300,000 working-days. This statement is made by Lieut.-Col. William F. Snow, head of the Social-Hygiene Division of the War-Department Commission on Training-Camp Activities.

The loss, figured in another way, amounted to the total incapacity of 6,300 soldiers for an entire year. Army statistics indicate that each case of gonorrhea means a loss, to the army, of a soldier's service for 9.53 days. The total loss from this disease was 1,486,680 days. For each case of syphilis, a loss of one soldier's time for 20.75 days is figured—a total loss of 550,250 days having thus been charged against this disease. Each case of chancroid results in a loss of 11.69 days, and the total loss from this cause was 258,230 days. It is estimated that five-sixths of this burden was brought into the army by men already infected at the time they first arrived at camp.

Investigation by impartial and competent observers has shown the American soldiers and sailors to manifest a splendid morale, not only with respect to their military duties in actual fighting and in garrison work, but, also in their leisure hours and in contact with the civil population. The accusation that has frequently been brought against soldiers and sailors—that they are very prone to be dissolute—is unfounded and could not be verified by the facts. Still, the figures quoted in the foregoing show that the venereal problem is a serious one and one that will be of special importance for the civil population now that our military forces demobilize and return to private life.

THE TRAINING OF HOME NURSES

During the recent epidemic of influenza, as also at the present time when a recrudescence of the epidemic is being experienced, the urgent need of women who are capable of caring for patients is greater than it was ever experienced within our memory. It is all but impossible to obtain nurses from training schools or from registry offices, while only here and there a "practical" nurse is at leisure only to be snatched up promptly by some physician or patient who has been watching for such an opportunity.

It can not be said that the dearth of nurses is attributable entirely to their activities in great numbers in military and naval hospitals as well as abroad; even though, undoubtedly, this circumstance adds to it. For some years, the demand for the assistance of these devoted women has far exceeded the supply.

There is another point, however: The services of a trained nurse entail upon the householder a serious drain upon his resources which already are barely sufficient, in the majority of cases, to cover the additional financial strain necessitated by illness in the family, by physicians' fees and druggists' expenses. There exists, particularly among people of the middle class, a great need of socalled practical nurses who are capable of following the physician's directions, of making the patients entrusted to their care comfortable, of watching symptoms, and so forth, and who, at the same time, are not above aiding a little in the household affairs, in fact, who may be able and willing to take vicariously the housewife's place if she is ill or to assist her if another member of the family is incapacitated.

In a great many instances, illness is not of such a nature as to require nursing that

calls for highly specialized training or knowledge. Any woman with a sufficient endowment of common sense can readily acquire the necessary information and experience in the space of a few months. This, of course, does not mean that the trained nurse is superfluous. On the contrary, her specialized abilities are in demand sufficiently often to make it desirable that far more young women enter the profession. But, at the same time, under less complicated conditions, and when the family exchequer is limited, practical nurses will do very well and often assist the physician satisfactorily and successfully.

With his characteristic energy and habit of going directly to the bottom of things, the Chicago commissioner of health, Doctor Robertson, has suggested that women who have a knack for taking care of the sick, but who for some reason or other can not take a regular course of training, should be given facilities for an abbreviated course, so to speak, say, of six or twelve months, to be fitted for practical nursing. However much such a plan may be discountenanced by the trained nurses themselves, it strikes us as being well conceived, indeed, and as meriting the support of physicians all over the country.

Every physician knows women whom he likes to have around with his sick because they have the gift of obeying orders, of making the patients comfortable, of saving the family from disintegration and, if only periodical, disaster. These women might become much more useful by taking a short course of training. They have it in them to become a blessing and a godsend to many patients who without such practical help would have to forego the assistance of any nurse whatever. We are distinctly in favor of Doctor Robertson's plan, and hope that something will come of his suggestion.

There is such a thing as being too contented. We read a lot about the slough of despond, but, we don't hear much about the slough of contentment. And yet, there is such a thing, and, so far as progress goes, a man is about as badly off in one as in the other. He won't do much traveling in either case. —Ralph C. Peters.

CLEAR OUT THE COBWEBS

In *The Volta Review,* there is being published serially an interesting "Diary of a Deaf-Child's Mother", from which the following passages are taken: "It would seem as though the mother of today should have more time to spare than her own mother before her had. I do not do half the sewing mother used to do. She made frilly aprons for me when I went to school, elaborate affairs with tatting and rick-rack and lace, and she made everything else that I wore, too, except my shoes and stockings. I buy all of Margaret's dresses ready-made; she has never had an apron; and she wears "knickerbockers" to play in. Mother used to spend twenty minutes every morning curling my hair around her fingers. Margaret's hair is straight and docked short, and she brushes it herself. Mother used to do endless baking and cooking. Her Sunday dinner was positively orgiastic; it used to take us all Sunday morning to get it and all Sunday afternoon to get over it. My meals are less hectic and a good deal more wholesome.

"All of which should give me more time to myself than mother used to have. But, mother wasn't expected to read two newspapers a day and remember what was in them. She didn't have to carry the map of "Verdun sector" in her head and know the names of all the generals in twenty different armies. She wasn't expected to knit helmets and take a first-aid course and sell Liberty Bonds. Nobody demanded that she be able to pronounce Tschaikowsky and Villa and Turgenev, expound the political maxims of Treitschke, and remember that De Bussy was not a face-powder. I have to know all of these things and take care of a house and a husband and teach a deaf baby besides.

"The only way I can do it is, by a process of systematic elimination; which, I hasten to add, is no hardship, really; for, all my life I have loved to get rid of things. I do not let things accumulate around the house—dirt, work, old clothes, old newspapers, magazines. There isn't a magazine more than three months old in the house, and though Robert sometimes laments the disappearance of September *Harper's* or of the January 2d *Literary Digest,* I find the clear spaces on the shelves and library-table exceedingly restful. I do not keep old clothes around, waiting for a free mending. I never have a free day to devote to nothing but mending; so, when a garment is so old that it can not be used without considerable fix-

ing over, I give it away. That isn't extravagance, it's self-defense. I will not be pestered by the perpetual reminder of things I haven't done. They drag me down just when I need suppleness and mental agility to keep up with Jack's demands."

All of which could be copiously commented upon if we had the space at disposal. But, anyway, just by way of at least one or two direct applications:

How about that medicine-cabinet or those medicine-shelves, doctor? And, are not there a good many "old clothes" littering up valuable space and gathering dust when it would be better to discard them? The same possibly may be true of your book-shelves, at least of the "grab"-shelf in which odds and ends of books and pamphlets accumulate unclassified and never read. Let us make a clean sweep of our drug-shelves; and no less of our brain-boxes. Would not it be nice if we could rid ourselves of useless, cumbersome ideas and retain only those that enable us to be of better and greater service, to progress constantly and to grow mentally and spiritually with the succeeding months and years?

You have to marry women to know 'em, and then, of course, it's too late.

—F. Graham Cootes.

THE STIMULATING EFFECT OF PRAISE

In "The Diary of a Deaf-Child's Mother," by Harriet U. Andrews, which is being published serially in *The Volta Review*, (already referred to), the mother in the story relates how, at first, she shrank from having it known to her friends and neighbors that her little boy was deaf, and how she was engulfed in self-pity and used to be afraid that her friends would pity her. However, in course of time, she succeeded in facing her problem courageously. She "acquired a sturdy complacency in the matter", and now finds that, instead of expressing pity for him (of course, they are sorry, but, they do not rub it in), they are interested in her efforts of teaching her son and are ready to admire his small achievements. When they see for themselves how the little fellow understands his mother and responds by his actions to her directions—instead of saying, "What a pity", they all exclaim, "Isn't it wonderful!" which, she adds, is very stimulating in its psychological effect.

There is, here, the text for an educational sermonette that might be preached to advantage to all of us. It happens all too often that the small efforts and tiny accomplishments of children and also of young people are watched by their wise seniors with indulgent amusement, that they are called "very pretty," "very nice", and all that, accompanied by a shrug of the shoulder or a turning away to more interesting things. The result is, that the applauded (?) youngsters return, perhaps with a sigh, to their occupations or put away the results of their efforts, with actually all the joy of creating frozen out of their little souls.

Undoubtedly, cordial applaud and approval have a tremendously stimulating effect upon one's efforts. If only the applause be tempered with good sense, it will serve to encourage the young aspirant to renewed and intense efforts. However, to the Scylla of nonapproval or lukewarm praise, there is opposed the Charybdis of foolish and excessive laudation. We have known ambitious young people, who had the making of good and industrious citizens in them, spoiled entirely and made into sad coxcombs by the silly asseveration of admiring friends, including even teachers, that their efforts were "just splendid," "wonderful", and all the rest of it; all of which was promptly accepted as being absolutely so, as nearly perfect as anything could be, and not, as it was meant to mean, that, for a youngster of that age, the work was truly well done and excellent. All praise should be tempered with the conditions naturally attached to it. Yet, it should be unaffected and unforced, showing a cordial interest and a sympathetic entering into the problems and ambitions that prompted them. In this manner, young people will be encouraged to constantly increasing and improving efforts; otherwise, many a budding genius may be choked in the bud and much useful work will be lost.

THOSE LIBERTY-BOND PAYMENTS

Wherever the English language is spoken, people know the meaning of "sportsman". "A fair field and may the

best man win" is the supreme law of all our games and sports. And that law, observed as a matter of honor, on every baseball-, football-, cricket-, and lacrosse-field, accounts in no small measure for the magnificent victories of the Allies on the western front. Our national sports have made us despise "quitting" and the "yellow streak".

The same code of honor holds with reference to Liberty-Loan subscriptions. And it has a vital element in addition—that of loyalty to Country and loyalty to the Army and Navy.

Every man, woman and child in America who subscribed for Fourth Liberty bonds on a deferred-payment plan is in honor bound to live up to the terms of the subscription-pledge. Nothing but "dire necessity", in the words of Secretary McAdoo, can possibly excuse "quitting" and failure to carry through the plan. Make all the payments, receive the Liberty Bonds, and hold them fast until the Government repays the principal.

This is a rule on the ball-field. Fight for a fair hit. Run hard for the bases and the home-plate. Work with the team. Fight down any selfishness. Combat any disposition to quit or to accept defeat. Be honorable and play the game like a man.

This is the program that Liberty-Bond subscribers are in honor bound to carry through. No matter how much self-denial it may call for—no matter how hard the "scrimping" and economizing may seem—every subscriber is bound by the laws of patriotism and by the "honor rule" of good "sportsmanship" to accept the sacrifices and make good the subscription-pledge.

Any other course throws a burden upon the government, interferes with the best interest of the Army and Navy, and is a stain upon one's personal self-respect.

Be a good "sportsman". Be a patriot. Have "Nerve". Pay for every Liberty bond that you signed for.

DEATH OF DR. A. A. NEFE

We have been informed of the demise of Dr. A. A. Nefe, late of Lookout Mountain, Tennessee, where he had practiced his profession for twenty-three years.

Dr. Nefe was born in Columbus, Ohio, in 1853. He was graduated at the College of Physicians and Surgeons at Cincinnati, and practiced medicine in his home state for twelve years. After that, he moved south and completed his life and his life's work in Lookout Mountain. Doctor Nefe was an old subscriber of CLINICAL MEDICINE and an enthusiastic advocate of positive therapeutics. Like so many other physicians, he, during the recent epidemic of influenza, gave himself untiringly to the enormous work demanded of him, spending his strength to such an extent that eventually he, himself, fell, a ready victim to the same disease.

The more I study the lives of great men, the more it seems to me that modesty is an almost invariable accompaniment of real greatness. —Bruce Barton.

HONOR FOR DR. BEVERLEY ROBINSON

The readers of CLINICAL MEDICINE who have become acquainted with Dr. Beverley Robinson, of New York, through his frequent communications to this journal, will feel like joining us in heartiest congratulations upon his election as corresponding member, *honoris causa*, of the Société Médicale des Hôpitaux de Paris.

Other prominent American physicians that were at the same time elected to membership in this society of physicians of the hospitals of Paris are: Dr. Alexander Lambert, president-elect of the American Medical Association and director of the medical service of the American Red Cross in France; Col. James T. Case, editor of *The American Journal of Radiology* and chief of the radiologic service of the American Army in France; Prof. William S. Thayer, of Johns Hopkins, consultant to the American Expeditionary Force; Prof. Morton Price, of Tufts College, New York; and Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research.

LET'S TALK IT OVER

For a long time we have not felt quite right about the designation of our "Miscellaneous Articles" department. When we speak of miscellaneous things, there is suggested the idea of something that can not be just placed definitely, something that might be thrown in a grab-bag, in a bureau for odds and ends, or a shelf that contains the rag-tail and bob-tail of our possessions. Yet, the department in which the "Miscellaneous Articles" appear in CLINICAL

MEDICINE, in our opinion, is a very important one. It is the "round table" of the readers. It is a common meeting ground on which the readers of CLINICAL MEDICINE have an opportunity to air their views, discuss questions of common interest, record objections and differences in opinion that they may wish to voice; in short, it is this department, we believe, that adds materially to the actual interest and to the popularity among physicians of CLINICAL MEDICINE.

Considerations like these have caused us repeatedly to cast about for another name. Essential changes always are to be avoided unless they actually constitute an improvement. Nevertheless, we believe that in this instance a change is justified, and it occurs to us that no name that we could find expresses so well the purpose and character of this department of the journal as the one that we have finally selected and that stands at the head of this article. We sincerely hope that it will meet with the approval of our readers.

Now, everybody, please keep in mind the purpose of the "Let's Talk It Over" department. It isn't so much for us, the editors, to fill it, as for you, the readers, to supply us with the material. It is your particular department of the journal. We depend upon you for "copy", reserving for ourselves only the privilege of editoral comment where it seems called for.

It is all a building process, the rack is built of atoms, the tree is built of cells, the house is built of bricks, success is built of conquered details.
—Straus, Investors Magazine.

THERAPEUTIC OPTIMISM

Some months ago, the writer was consulted by a lady coming from a country town in one of the central states. This patient had passed through an attack of pleurisy and a later one of pneumonia, the latter being complicated with empyema and which necessitated the resection of a portion of one rib. Recovery was exceedingly slow; indeed, quite unsatisfactory, since there remained a discharging sinus and the patient's general health showed no signs of improvement. The attending physician gave her to understand that she could not expect anything better and, though still a young woman, of about 36 years, she seemed doomed to a life of invalidism. Careful and repeated examination and continued observation provided certain indications for curative treatment which was aided materially by treatment of the sinus with Beck's bismuth paste. After the course of several months, this patient returned home in very much better health than she had enjoyed for years and later reports indicate that her improvement is lasting.

An old lady was afflicted with pain and weakness in the right shoulder and knee, leading to almost entire loss of power in both extremities on the right side. Her physician treated her with various tonic remedies, but, to little avail; while massage and other manipulative treatment, administered by an interested nurse, afforded very slight improvement. A careful examination of this patient showed her metabolism to be badly disturbed; she had lost courage and seemed fast drifting into entire helplessness. A new physician, who had been called, took pains to instil into this patient a confidence of coming improvement. The metabolic disturbances were corrected by suitable remedies; the tired nerves were stimulated and supported by hypodermic injections of nuclein solution, other indications being met by appropriate remedies. The result is that, for several months, this old lady has now once more been able to attend to her little household duties and to take walks that, for her, must be called quite long. Her outlook on life has changed entirely and she is again happy.

A lady in middle life had, through serious reverses for a number of years and on account of worry over her husband's protracted illness, lost her mental poise and, in fact, had become mentally deranged, although not seriously so, and had become alarmingly ill. Recovery of her physical health was exceedingly slow; mentally, there remained a pronounced fear of impending disaster as also of possible insanity. Her physician appeared to be unable to allay her fears or to complete the "job" of guiding her back to a satisfactory state of physical health. Another physician was consulted who ascertained the physical indications for treatment and acted upon them, with the result that soon a decided improvement in her general health became noticeable. More, however: this

physician made a painstaking study of the patient's mentality; discussing with her in detail her fears of what might be going to happen and showing her the groundlessness of these anticipations. Gradually, largely owing to the unvarying and confident assertion of the physician that a complete cure was possible, this patient rid herself of her morbid apprehensions, regaining her normal optimistic view of life. In consequence, her physical conditions improved markedly so that she is again able to manage the affairs of her household. She has bravely passed through various periods of stress and anxiety, since, thus showing that her recovery is an accomplished fact.

What is the moral? Is any physician justified in declaring to any patient that he, or she, can not be improved further, that the outlook for an ultimate recovery is hopeless? Is it ever right, and fair, to deprive any patient of every hope as to the future? Many physicians, on meeting certain cases of illness, such as, for instance, lobar pneumonia, throw up their hands and give up. They as much as suggest the immediate engaging of the undertaker. Something like it happened, and still is happening, with respect to the epidemic of influenza and influenza-pneumonia. A diagnosis of these maladies is, with many, as good as a death sentence.

What cowardly neglect of duty! A physician who is not willing to fight death, step by step, to the last ditch, is not worthy of his calling and would do better to give it up for something else. If our boys had given an unfavorable prognosis, during those serious and gloomy days in the Argonne, the war might not have been won by the democratic powers but by the dark forces of autocracy and frightfulness.

But, those boys kept on fighting!

It is one of the first duties of a physician to be an optimist and to impress his patients with the fact that there is always hope; also with the fact that he is doing the very best that can be done. A patient who has the confident assurance that his physician is working hard in his behalf—not, though, by "expectant" treatment—will cooperate courageously and thus comply with one very important condition of recovery. The physician who knows that his drugs are capable of doing certain things, and who applies this knowledge, imbues the patient with the definite expectation of coming improvement.

A pessimist has no place in the sickroom.

Let's be optimists.

If you say, "Such and such a thing can't be done," and a man comes back at you with "I have done it!"—well, it's your next move, isn't it?

—American Magazine.

"A REGISTRATION FEE FOR PHYSICIANS"

Two months ago, Mr. Francis W. Shepardson, director of the Department of Registration and Education of the State of Illinois, discussed (*The Jour. A. M. A.* Nov. 16, 1918, p. 1629) the first year's experience of this department in its attempt to enforce the Medical Practice Act. A preliminary survey of conditions disclosed certain discouraging elements in the Illinois medical situation. Especially was it found that "there are more fakers and charlatans in medicine than in all other professions and trades put together. There are more irregular, improper, indecent and immoral things connected with medicine than with all the rest." Mr. Shepardson deplores the absence of efficient and effective organization of the members of the medical profession, and generally treats physicians to a philippic that we might do well to read, mark and inwardly digest. For, do not mistake! while there are some statements in his sermon that are not quite fair and others that refer to conditions for which physicians may not justly be blamed, Mr. Shepardson is quite right in asserting that there is need of reform. This must readily be granted.

The Illinois Consolidation Bill, which became a law early in 1917, has for its purpose the regulation of medical practice in such a manner that it shall become possible, in course of time, to eliminate dishonest and incompetent medical practitioners. The success of any law depends not only, as *The Journal* suggests (*J. A. M. A.*, Nov. 30, 1918, p. 1827), on the ability and integrity of those appointed to enforce it, but, also on the willingness of the state's attorneys to enforce the law, when transgressions against it are brought to their attention, and, likewise, on the attitude on the part of the public, as to whether or not it is in favor of a certain law. While the Department of Registration and

Education succeeded in bringing about important changes for the better in medical schools and in prosecuting medical crooks and illegal practitioners, its activities in the latter direction were handicapped greatly "because regularly licensed physicians refused to aid, because state's attorneys declined to enforce the laws, and because county medical societies have been too weak or too fearful to demand that such prosecuting officers perform their sworn duty, or too little interested to help in creating public sentiment in support of law and decency."

It is the purpose of the department to improve conditions medical, for one thing, by making certain that the license to practice medicine in Illinois really shall mean something. The members of the examining committee have determined, for instance, to make the entrance into the profession more difficult by closer scrutiny of the written and oral reports of the candidates. "They share with other representatives of the department in the earnest desire to make the Illinois license in medicine most honored of all state licenses because most carefully guarded."

However, with conditions in the recognized medical schools more satisfactory than ever, and with the examinations for licensure greatly improved, the next important task of the department is, the regulation of practitioners within the state. Mr. Shepardson suggests, as a means to this end, the annual registration of all licensed practicing physicians in the state, with the payment of a small annual fee that would provide funds for the activities of the department.

It is claimed that such registration would enable the department to keep in touch with legal practitioners; it would be a great aid in keeping a correct roster of addresses; it would assure a correct list of those who are entitled to the privileges of the Medical Practice Act; it would enable the department to discover cases of individuals using the license of others who have died or have left the state, or from whom certificates may have been stolen or purchased; it would enable the department better to control some of the unethical practitioners whose actions bring discredit on the medical profession.

As was to be foreseen, Mr. Shepardson's suggestion called forth much comment, both favorable and the reverse; the latter being not always quite dignified or to the point. Many physicians resent the suggestion of annual registration, even intimating that the fees collected would come in handy for somebody in need of a soft job. Such insinuations do not solve the problem nor do they further its solution.

There can be no doubt about it that medical conditions, in Illinois as well as in other states, leave much to be desired and that every honest attempt to improve matters should receive proper attention. It has been suggested that the constantly increasing difficulties attending the gaining of a medical education and of a license to practice encourage and promote the unrighteous cause of irregular practitioners. It is certain that the unsatisfactory financial returns of medical practice, especially in small towns and in country districts, do not tend to attract the best and brainiest or the most capable among young men and women. These are only a few of the points that might be raised in the discussion of the question.

The tendency of the last years, fostered greatly by war conditions, has been in the direction of state medicine. It has been questioned whether medical men returning from military service will be satisfied to go back to old conditions more or less haphazard. It has been claimed that physicians properly should be employes of the state, duly licensed and inducted into their work and, likewise, paid by the state. Many other suggestions have been offered from time to time, all looking to an improvement over old-established conditions and all claiming to bring about a greater degree of efficiency in carrying out the duties of the medical profession which is, not only, to cure disease but, still more, to prevent disease. Mr. Shepardson's important article covers one phase of the complicated problem. The whole of it hardly is understood or realized. Yet, the next years will undoubtedly bring forth many changes. Will they be for the better?

Leading Articles

The Treatment of Infected Wounds with Dichloramine-T

With Special Reference to Its Advantages Over the Carrel-Dakin Methods*

By HERBERT W. BAKER, B. A., M. D., Toronto, Canada

THE subject of the treatment of infected wounds is one that has probably excited more interest than any other among the medical profession since the war began. Many methods of treatment have been devised, tried out, and cast aside. Probably no part of our prewar teaching has changed as much as this question of antiseptics. We formerly used bichloride of mercury, carbolic acid, lysol, boric acid, et cetera, believing more or less that they killed microorganisms under all conditions; but, now we know that they are antiseptics, that is, they inhibit the reproduction of bacteria; however, they are not germicides unless used in strong solutions under favorable circumstances. The perfect germicide is one that will destroy bacteria without injuring the body-cells. None of the prewar antiseptics came up to this standard. Dr. H. D. Dakin, probably more than any other, has done much laboratory-work in antiseptics, and, in general terms, he gives us the following results:[1]

Dakin's Valuable Experiments

Using a growth of staphylococcus aureus in a blood-serum and muscle-extract medium, he found that:

(1) Mercuric chloride, 1-10 percent, did not disinfect in three hours, but, did in twenty-four; (2) silver nitrate, 1 percent, did not disinfect in twenty-four hours; (3) argyrol, 15 percent, did not disinfect in six hours, but, did in twenty-four; (4) zinc chloride, 3 percent, did not disinfect in twenty-four hours; (5) phenol, 2 percent, did not disinfect in twenty-four hours.

Of dye antiseptics: (1) malachite green, 0.3 percent, did not kill in forty-eight hours; (2) acriflavine, 0.3 percent, did not kill in six hours, but, did in twenty-four; (3) proflavine, 0.3 percent, did not kill in twenty-four hours.

So, we see that our old favorites are gradually losing their stand.

In the laboratory established at Compiegne, by the Rockefeller Foundation, in the fall of 1914, Dr. Henry D. Dakin, of New York, examined about 200 substances known or thought to be antiseptics and finally came to the conclusion that chlorine compounds were the best germicides. Labarraque's solution, known and used for many years, was a very efficient antiseptic, but, owing to its high alkalinity causing irritation, it could not be used on the tissues continuously. Dakin reduced this alkalinity with boric acid, and, as a result, obtained a solution that did not irritate the open tissues. This solution soon became known as "Dakin's Solution". It is an aqueous mixture of sodium hypochlorite between 0.45 percent and 0.50 percent in strength.

Carrel's Technic and the Objections to It

Dr. Alexis Carrel, who was associated with Dakin in his work in France, devised a means of using this solution to the best advantage. The wound was opened widely in such a manner that it formed a well, and small perforated tubes were paced in such positions that the Dakin's solution injected

*Read before the surgical section of the Academy of Medicine, Toronto, April 16, 1918. Reprinted from *Canadian Medical Association Journal*.

1. Dakin and Dunham, "A Textbook on Antiseptics".

through them would reach every crevice of the wound. These tubes were linked together and, from a reservoir suspended above the bed, the solution was run into the wound every two hours, day and night. The results, when all the technic of the treatment is properly carried out, are striking, badly infected wounds being sterilized in a few days. Carrel, Depage, and others have reported many cases where wounds of all kinds have been sterilized and secondary suture done with success, but, as Carrel himself says, "the indifferent success that many have had is because of their failure to grasp and apply the details of the technic."

In order to carry out this treatment, the assistants must be specially trained. The house-surgeon doing the dressings must know the details perfectly; the nurses that assist him and who inject the Dakin's solution (every two hours) must, also, be specially trained. All those that have had success with this treatment agree upon these points. In a general hospital where the nurses are changed frequently, such a procedure is impossible. Here, then, is the first place the technic may fall down.

At the Rockefeller Institute, where Carrel is at present training American army-surgeons, I spent ten days in their laboratories and wards. The house-surgeon, a trained man, had four or five nurses and an orderly to assist him with the dressings. He took about two hours to do fifteen dressings. Considerably more than half of that time was spent in preparing the surrounding skin with vaseline or vaselined gauze, in order to prevent irritation. In spite of this preparation, I saw several cases where the skin had been more or less "burned" by the solution. Without this care, serious results may follow. Probably the most important part of the Carrel technic deals with the protection of the skin from the irritation of the solution.

It is essential at the primary operation to prepare the wound so that it will act as a well to hold the antiseptic solution. Thus, the first principle of surgery of infections, dependent drainage, is abandoned. If at any time during the repair of the wound the technic should break down, such as breakage of apparatus or failure in the supply of solution, these wounds act as pus-pockets, and the results to the patient may be disastrous. Again, when the wound has been sterilized, if it is impracticable to suture it, there is a basin left that fills with pus, and, as is well known, many such wounds will not heal as rapidly because there is not dependent or continuous drainage.

Dakin's solution is very unstable. In order that it may be strongly enough antiseptic, it must have over 0.45 percent of active chlorine present, and that it may not irritate the tissues it must be less than 0.5 percent. The solution, therefore, must be made accurately and, at the most, every second day. Moreover, the alkalinity must be reduced almost to neutrality. Owing to instability, this alkalinity tends to increase, and, therefore, the solution must be tested daily by titration and with phenolphthalein. Only those that have done this work and kept a ward supplied with Dakin's solution can realize the time and care all this takes.

Another problem that is becoming more important every day is, the amount of dressing material used. With the price of gauze and cotton soaring, we must do all in our power to save. The Carrel technic consumes more cotton pads than does any other kind of dressing, because of the quantity of solution that is injected into the wound twelve times a day. Unless the technic is absolutely perfect, there are going to be certain cases where there will be an overflow resulting in the wetting of the bed, with discomfort to the patient and more work for the nurse.

The apparatus used in the Carrel-Dakin treatment is complicated and expensive. Rubber tubing is difficult to get and high in price, and a great quantity is needed.

We are told that the main reason why there are fewer infected wounds in the army-hospitals now than there were at the beginning of the war is, that the primary operation is being performed on an average one and a half hours after the receipt of the injury, instead of after many hours or maybe days. In a hospital using the Carrel-Dakin treatment, much time is used in putting the tubes in place and fastening them there. Following a "push", many hours will be used in an operating-room doing this work that will keep some less fortunate patient from getting prompt attention.

Dichloramine-T, and How Manufactured

Because of some of these objections, we decided to try out another chlorine antiseptic, one that was reported, in *The Journal of the American Medical Association* for July 7, 1917, by Dakin, Lee, Sweet,

Hendrix, and LeConte; namely: toluene-parasulphon-dichloramine, or, as Dakin named it, dichloramine-T. This substance has the chemical formula $CH_3C_6H_4SO_2NCl_2$, and it was made first by Kastle, Keiser, and Bradey[2] in 1896, and later by Chattaway[3], in 1905, and has been more recently brought out and used by Dakin.

It is an aromatic chloramine in powder form, containing a little over 29 percent of chlorine. It is made in the following manner: Chlorinated lime (from 350 to 400 Gm.) of good quality (of 25 percent or more of available chlorine) is shaken with two liters of water in a shaker for half an hour and then allowed to settle. The supernatant fluid is siphoned off and the remainder filtered. Powdered toluene-parasulphonamid, 75 Gm., is then added to the whole of the hypochlorite solution and shaken until dissolved. The mixture is filtered, if necessary, placed in a large separating-funnel, and acidified by the gradual addition of acetic acid (100 mils). Chloroform (about 100 mils) is then added, to extract the dichloramine, and the whole is well shaken. The chloroform layer is tapped off, dried over calcium chloride, filtered, and allowed to evaporate in the air. The residue is powdered and dried in the vacuum.

Another method, more rapid for greater quantities is as follows: 50 Grams of para-toluene-sulphonamid is dissolved in 500 mils of water, and 100 Grams of sodium acetate and 100 mils of chloroform are added. The container is immersed in cold water and a rapid stream of chlorine is passed in until the mixture is saturated. The mixture is allowed to stand a few hours, when, if the odor of chlorine disappears, more of the gas is passed in. If necessary, more chloroform may be added, to dissolve the dichloramine. From this point, the procedure is the same as in the preceding method.

Its use as a disinfectant is dependent upon the reaction of the NCl_2 group in the side chain. In this group, the chlorine is very loosely held and is given off whenever the substance comes in contact with any other material having an affinity for chlorine.

This takes place in the presence of proteins. All proteins contain large numbers of amino-acid groups represented by the formula. $R—\underset{\displaystyle NH}{\overset{\displaystyle H}{\underset{|}{\overset{|}{C}}}}—CO$. The H atom attached to the N atom is replaced by the Cl atom: $R—\underset{\displaystyle NCl}{\overset{\displaystyle H}{\underset{|}{\overset{|}{C}}}}—CO$. This compound then contains the NCl group and belongs to the class of chloramines. Their chlorine is still active and they are themselves active germicides. Other reactions also occur, which use up part of the chlorine, converting it into an inert form, as, for example, the chlorine becomes united to carbon or forms chlorides. This is the chemical reaction that takes place between the dichloramine-T and the proteins of the bacteria, and this chlorination of bacterial proteins seems to be incompatible with the life of the micro-organism.

We know from our study of chemistry that the union of chlorine with other substances is greatly hastened by the presence of water—even the small amount of moisture in the air—by the action of light, especially direct sunlight, and by heat.

Keeping in mind these characteristics of chlorine and chlorine compounds, we now will consider the characteristics of dichloramine-T.

The Characteristics of Dichloramine-T and Its Oil-Solution

It is only slightly soluble in water, but freely soluble in certain oils and in benzol, chloroform, carbon tetrachloride, alcohol, and acetone. In order that the dichloramine-T may be used efficiently, it must be in solution. Of the different solvents, chloroform and carbon tetrachloride are the only two that contain their limit of chlorine and, therefore, give us permanent solutions; but, as these can not be used continuously on the tissues, they can not be used as carriers for the dichloramine-T. Eucalyptol is one of the oils that will dissolve it; however, this oil, having an affinity for chlorine, extracts the chlorine from the dichloramine-T, thus causing decomposition. If, however, chlorine is added to the eucalyptol before dissolving the dichloramine-T in it, we get a fairly stable solution. Originally[4], the eucalyptol was

2. *Amer. Chem. Jour.*, 18, p. 491, 1896.
3. *Jour. Chem. Soc.*, London, 87 (1); p. 145, 1905.
4. *Jour. Amer. Med. Ass'n.*, July 7, 1917; vol. lxix. pp. 27-30.

treated with potassium chlorate and concentrated HCl, the result being an oil containing about 1 percent of chlorine.

This oil would dissolve about 15 percent of dichloramine-T, but, because it caused irritation when used on wounds, it was found necessary to dilute it up to 50 percent with paraffin-oil, also chlorinated. These are the preparations that have been on the market for some months.

However, we had considerable difficulty in getting stable solutions with these mixtures. The addition of the paraffin-oil caused a precipitate to form in two to four days.

In October last, while in Philadelphia, Dr. Paul Lewis, of the Henry Phipps' Institute, told me of another method that they were using to chlorinate the eucalyptol, and we soon had some made in the laboratory here. Since then, Krauss and Crédé[5] have published this method of making it. Chlorine gas from a cylinder was passed through eucalyptol for about thirty hours in good daylight, the temperature being kept below 80° C. by regulating the flow of gas. This raises the specific gravity from 0.925 to 1.2. It was then neutralized with dry sodium carbonate and dried with calcium chloride, when it was ready for use.

This oil, we found, would dissolve 20 percent dichloramine-T and could be used without diluting with chlorinated paraffin-oil. The great advantage of this solvent was, that a solution of dichloramine-T in it was stable for at least six weeks if kept under proper conditions. Also, a great mass of antiseptic, say, 20 percent dichloramine-T, could be used for a primary application in the operating-room.

This is the solvent that we have used in most of our cases up to February 15. As it did not come on the market, we made it in the laboratory, and after some trouble succeeded in turning out a good product.

Chlorinated Paraffin (Chlorcosane), the Improved Solvent

In January, 1918, Dakin and Dunham[6] suggested the use of chlorinated paraffin-wax, to which they gave the name of chlorcosane, as a solvent for dichloramine-T. This is made from ordinary paraffin-wax chlorinated by passing a rapid stream of chlorine through it until it has increased about 50 percent in weight. The temperature must be kept between 125° and 140° C. The hydrochloric acid formed is then neutralized with dry sodium carbonate and the oil filtered while hot.

We promptly set up the apparatus and made the solvent, and the results are even better than we anticipated. We obtained a solvent that was much cheaper, materials costing about 40 cents instead of 4 dollars, and the time to make it was reduced by several hundred percent.

This solution causes no irritation whatever on the most painful wounds. Another great advantage is, that the odor is very much reduced and much less disagreeable. It is a clear oil, slightly heavier than water, and of high viscosity. It will dissolve, at room-temperature, 8.5 to 10 percent of dichloramine-T. To make the solution, it is advisable to heat one-fourth of the oil to 80° C., dissolve the dichloramine-T in it, and then add the other three-fourths of the oil, as dichloramine-T dissolves much more rapidly in the heated wax.

We use this solvent with 5-percent dichloramine-T now in all cases, except skin-grafts and large superficial wounds, such as burns, where we use 1 percent.

Precautions Anent Dichloramine-T-Chlorcosane Solution

There are several precautions one must take in using dichloramine-T, which all depend upon the fact that the solution, if not kept properly, may be easily decomposed.

1. The solution must be kept in dry brown bottles (blue bottles will not do), and not exposed to sunlight.

2. If water, alcohol or other adulterant, even a few drops in amount, is introduced into the bottle, it will cause decomposition in the course of twenty-four hours.

3. Decomposition is indicated by the presence of crystals in the solution or by the appearance of cloudiness. This means that the dichloramine-T has been broken up and toluene-sulphonamide formed. This is not an antiseptic and is an irritant. Therefore, decomposed solutions should be at once discarded. In chlorcosane solutions, if they are kept cold, the wax may crystallize slightly. Gentle heating will cause this to melt again. Toluene-sulphonamide, the decomposition-product, will not dissolve except in hot solution.

4. Bottles or other containers of solutions of dichloramine-T should be cleaned with chloroform, as this will dissolve the dichloramine-T and the wax. They should

5. *Jour. Amer. Chem. Soc.*, Dec., 1917.
6. *Brit. Med. Jour.*, Jan 12, 1918

then be thoroughly dried before using. Containers in which the dichloramine-T has decomposed should be washed with hot water and dried before using again.

5. Wet dressings should not be put over a wound on which dichloramine-T has been used, because the water will cause decomposition of the dichloramine-T in the wound.

6. If used in an atomizer, this should be all glass, as the chlorine will corrode metal and hard rubber.

The results we obtained with dichloramine-T were, certainly, as good as those we had with Dakin's hypochlorite solution. We have a solution now that, unmixed, is permanently stable, or mixed, is stable for from two to three months, and takes only a fraction of the time to make up.

Very little training is necessary to know how to use it, and that only on the part of the surgeon or house-surgeon doing the operations and dressings. The nurses do not need to be specially trained.

The amount of dressing-material used is very much less. In Ward A (Toronto General Hospital) we use about three-fourths as much as do the other services. On account of the uneven number of dressings done, we can not give exact comparative figures; however, Sweet gives figures for a hospital in France. With an equal number of dressings done, the ward using eusol needed three times as much gauze and about 20 percent more cotton than did the ward using dichloramine-T.

The apparatus necessary for the use of dichloramine-T is an all-glass atomizer and occasionally a glass pipette or a small rubber catheter, which costs considerably less than the Carrel apparatus.

The time necessary for the primary operation is considerably lessened, as there are no tubes to put in place and retain there. The time used in doing the dressings is also less, Sweet reporting that he does 30 major dressings in ninety minutes.

Considering the question of the transportation of wounded, it is well known that the Carrel-Dakin treatment can not be carried out when a patient is being transported, while with dichloramine-T it is simple.

Method in Detail of Using Dichloramine-T

We wish now to present in detail the method of using dichloramine-T in different conditions, with certain case-reports.

We have purposely put the treatment of newly made wounds as the first in order, to make it more impressive, because we feel that in this class of wounds dichloramine-T is of the most service.

We are more and more impressed with the importance of the interval of time elapsing between the receipt of the injury and the time of primary treatment, as being the most important factor in the prevention of infection.

In the battle of the Champagne, 80 percent of the cases contained the gas-organism in the wound when cultured and 60 percent had the clinical symptoms, but, in the battle of the Somme, but 20 percent had gas on culture and only 5 percent showed clinical symptoms. In 1915, our mortality was 4.6 percent, but, in 1916, it was only 1.9 percent. Why this improvement? Many voluminous reports have appeared of greatly improved results in the treatment of wounds with many germicidal agents. However, the fact that this improvement was not confined to wounds treated with any one particular germicide suggests that other factors might at least be equally important. The organization of the armies had so improved during this year and a half that the wounded were being treated in one and one-half hours, instead of in from five to seven days. Furthermore, the surgeons were equipped more completely, so that the primary operations were thorough. Removal of 20 percent of the foreign bodies and the routine free incision, with wide excision of dead and devitalized tissue, had been practiced. There is no doubt that these two points have brought down the death-rate. Moynihan and Crile claim that all that is necessary is, excision of the devitalized tissue. Carrel's technic calls for the same operation.

Our technic has been to use gasoline to clean the surrounding skin, to remove as much devitalized tissue as possible, then to swab all the wound-surfaces with dichloramine-T, leaving them wet with it and, if the wound has been received within six hours, to stitch it up without drainage.

Dichloramine-T does not affect the tensile strength of catgut nor the holding of the knots, so that the danger of secondary hemorrhage from the slipping or premature absorption of ligatures can be disregarded.

At the Midvale Steel Works, near Philadelphia, where there are about 12,000 employes and where there is a well-organized hospital that keeps accurate records, the following comparative results are given:

In 1916, they used iodine, and, in 1917, dichloramine-T. Using iodine, they had 9.8

percent of their wounds showing infection. With dichloramine-T, they had 1.5 percent of their wounds showing infection. Primary suture of wounds, using iodine as antiseptic, gave pus development in 11.6 percent, while using dichloramine-T, there was pus development in only 5.4 percent.

In a series of 32 consecutive cases attended by us, we had infection following in one case, or 3.1 percent.

Compound Fracture

In the case of compound fractures, we take a swab from the wound, for culture, before using any dichloramine-T. Then the wound is opened widely and the devitalized tissue cut away, including the edges of the external wound. Dichloramine-T is then inserted into the seat of fracture, all areas of the wound being thoroughly saturated with it. If the fracture is a recent one, that is, within three or four hours, we would close it without drainage. If over this time, we insert a gauze drain saturated with the oil. This is removed in forty-eight hours and more of the oil is injected into the wound. When we get a negative culture from the wound for three days in succession, we close it, dealing with the fracture by bone-plating or pegging, as we see fit.

Case-report.—A. K., admitted to Ward A, Toronto General Hospital, November 27, 1917, about fourteen hours after sustaining comminuted fracture of the lower end of humerus, with small lacerated wound. This wound gave us a culture of staphylococcus and streptococcus. It was opened widely, swabbed with dichloramine-T, packed with dichloramine-T gauze, and partly stitched. More oil was injected into wound through a medicine-dropper daily. Several negative cultures were obtained. About two weeks after admission, the wound was opened, the two lower fragments were fastened together with a bone-screw, and the upper fragment, when reduced, was held in place by its spiculated extremity. The wound stayed clean, and the patient was discharged five and one-half weeks later.

Secondary-Suture Cases

The question of the secondary suture of wounds is a very important one, especially from a military standpoint. One of our earliest cases is an illustration of the efficiency of dichloramine-T.

Case shown to Surgical Section in November, 1917.—E. D., admitted to Ward A, Toronto General Hospital, September 18, 1917. About one month previously, he had had his foot crushed and a Syme's amputation was performed. The wound became infected and, on admission to the hospital, the flap had dropped down and its anterior surface as well as the end of the stump was covered with thick, unhealthy granulation-tissue, with a few small sloughs still attached. The discharge from the wound was a thick yellow pus, emitting a very foul odor. Culture showed staphylococcus-infection.

The wound was sprayed with 5-percent dichloramine-T. In twenty-four hours, the odor had disappeared and the discharge had lessened considerably. On the sixth and seventh days, we could, by direct smear, find no bacteria, and on the ninth day we scraped off the granulation-tissue and trimmed the edges of the flap and stitched it into place. There was a slight discharge from a small sinus at the side of the wound for some time, but, when a small sequestrum from the end of the stump was removed, the sinus soon closed. This illustrates a point we have proven by several cases, namely: that, if a wound does not soon become sterile under the use of dichloramine-T, it is either because the antiseptic is not getting to all parts of the wound or there is a foreign body present.

Cellulitis

The focus should be excised when mechanically practical, but, if this is impossible, it should be widely exposed so that the germicide may have an opportunity for a complete chemical contact with the bacteria. Adequate drainage should be provided according to accepted surgical principles. Then the wound-surfaces should be thoroughly covered with the dichloramine-T solution and the edges of the wound held apart by gauze packing saturated with the solution. A very light gauze dressing is then applied, not more than four layers of gauze being necessary. If the discharge is excessive, fresh gauze may be reapplied during the day, but, in our experience, this is not necessary for more than a day or two. One does not need to use thick cotton pads on these wounds. The dressing is done once a day, using all aseptic precautions. The gauze packing is removed and not reapplied unless the walls of the wound fall in and make it impossible to insert the antiseptic. Dry cotton wipes only are used to wipe out the wound. The

dichloramine-T is sprayed into the wound with an atomizer, if it is superficial, or injected into the deeper parts through a soft-rubber catheter or a glass pipette. The same minimum amount of dressing-material is used. When a culture shows the wound to be sterile, it is not necessary to do dressings oftener than once in two or three days.

Case-report No. 1.—T. B., referred to by Doctor Shields. Admitted to Ward A, February 11, 1918. Four days previously his left wrist became swollen and sore; two days later, it was swollen to the elbow. On admission, arm from wrist to shoulder was greatly swollen, browny-red, and extremely painful. There was a small area of fluctuation over the top of the olecranon. Temperature, 103.4° F.; pulse, 140. Patient was perspiring profusely and was profoundly toxic. Operation, 9:30 p. m., February 11. Incision into the fluctuating mass over the olecranon revealed a bursa full of clear serum. Eleven other incisions, each about two inches in length, were made in the arm. From the incisions above the elbow, just a clear serum was obtained, but, from those below the elbow, a thin, watery pus exuded. The infected subcutaneous tissue was broken down with the finger. The wounds were then swabbed with 20-percent dichloramine-T and gauze packing soaked in the same-strength solution was inserted into the subcutaneous space between the incisions. A light dressing was applied and the patient returned to the ward, with orders to the nurses to keep several hot-water-bottles applied to the arm continuously. A culture of the pus showed the presence of pure streptococcus.

On the second day after the operation, the temperature was normal and remained so. On the seventh day, a culture from the wound was sterile, and on the twentieth day all the wounds were closed, except the one over the olecranon.

Case-report No. 2.—F. S., admitted to Private-Patients' Pavilion, Toronto General Hospital, under Dr. F. N. G. Starr, December 26, 1917. Three days previously, he cut his right hand on a porcelain tap. On admission, the temperature was 101° F.; pulse, 132. The hand was greatly swollen, extremely painful, and the skin over the hypothenar eminence was black and, on removal, it was found that the muscle underneath apparently was gangrenous. There was a thin, watery discharge from all parts of the palm. The infected area was opened by four incisions and swabbed out with 20-percent dichloramine-T solution. Three tubes were inserted for drainage. Culture showed pure streptococci. On the third day, his temperature was normal, and in a week a culture from the wound was sterile, which in less than three weeks was completely healed.

Carbuncles

Until recently, we always felt that we got better results by completely excising a carbuncle. Our method of treatment has changed, however, since using dichloramine-T. We now make a crucial incision, curette out as much of the necrotic tissue as possible, insert a drainage-tube through the base of each flap, swab out the wound with 20-percent dichloramine-T solution and leave it packed with gauze soaked in the same solution. The gauze is removed the following day and replaced by fresh gauze soaked with 20-percent dichloramine-T solution. The day following, all packing and tubes are removed and the wound is thoroughly sprayed with 5-percent dichloramine-T solution. The force of the spray very soon dislodges any particles of necrotic tissue left.

We have treated several cases, however, one will serve to illustrate.

Case-report.—T. G., referred by Dr. C. E. Stacey on February 2, 1918. Carbuncle 3½ inches in diameter on back of neck. It had several openings and was discharging profusely. It had been incised three days previously, but, was not spreading rapidly. A crucial incision, sloughs swabbed out with gauze wipes, drain put in base of each flap after swabbing out with 20-percent dichloramine-T solution. Daily dressings with 5-percent dichloramine-T solution. On the seventh day, all slough was gone. On the ninth day, the incisions were healed, with the exception of a small area in the center that was granulating over. On the twentieth day, the wound was healed.

Lee advises secondary suture if the wound becomes sterile before the twelfth day. He reports good results. We have had no satisfactory cases in which to try it.

Intraabdominal Infection

We have used dichloramine-T in several cases of appendicitis that required drainage. Our technic in these cases was, to swab the bowel in the neighborhood of the infection with 20-percent dichloramine-T

solution, pack gauze soaked in the solution into all parts of the infected area, insert through and through silkworm-gut sutures and leave them untied. In cases where the split-muscles opening was made, the two middle sutures were so inserted that, when drawn tightly, they pulled the separate parts of the internal oblique muscle together. The following daily dressings consist in applying from 2 to 3 mils of the oil around the wound and gauze, and in about four days the gauze will come out quite easily. Each day after this, the sinus is filled with 5-percent dichloramine-T solution. On obtaining a sterile culture from the wound, the sutures are tied. Sometimes only it will be necessary to leave a small opening for the gauze and to stitch up the rest of the wound. In this case, after the gauze is removed, the sinus is filled daily with oil until it fills in with granulations.

Very often appendixes are being removed, and then the question arises as to whether a tube should be put in for drainage, because of the gangrenous condition of the organ and the possibility of a small amount of peritoneal infection being present. In these cases, if one will thoroughly swab off the bowel in the neighborhood of the appendix-stump with dichloramine-T, and likewise the incision through the abdominal wall, one will find that the antiseptic is enough to take care of any infection left.

Any other intraabdominal infection can be treated in a similar manner.

Case-report. — Mr. S., patient of Dr. F. N. G. Starr. On November 14, 1917, a large appendical abscess was opened through a split-muscle incision and the appendix removed. The cavity was swabbed out with 20-percent dichloramine-T solution and packed with gauze, 20 percent. Silkworm-gut stitches were put in, but, not tied. In this case, the gauze was removed the next day by the houseman. For fourteen days, 5-percent dichloramine-T solution was injected into the sinus. On the fourteenth day, the bacterial count was 1-10. The granulations were swabbed off the surface and the stitches were tied. There was only a very slight discharge after this, and the patient walked out one month from the day he came in.

Burns

It appears to us that in the treatment of burns there are three things to accomplish: (1) the relief of pain, (2) the control and elimination of infection, and (3) the promotion of healing. The first point is accomplished if a dressing is used that does not cause pressure or irritation of the wound; the second is obtained if an efficient germicide is used—for, all burns are infected; the third results from the use of a dressing that does not need to be changed frequently, thereby causing the least disturbance to the delicate newly formed epithelial cells, and from the use of an antiseptic that does not injure the newly formed cells nor cause the formation of unhealthy granulation-tissue.

As a dressing for burns, we use an open-mesh paraffined mosquito-netting, as suggested by Captain W. P. Furness,[8] of Philadelphia. It is made by dipping sterilized mosquito-netting into melted paracol or other wax of low melting-point and allowing to drain. This results in a thoroughly waxed open-meshed gauze. This is placed in close contact with the surface of the burn and fastened around the edges with hot wax or adhesive. No other dressing is put over this but it is left exposed to the air. The wound is sprayed with 1 or 2 percent dichloramine-T daily. As the discharge forms, it comes out through the open-meshed gauze and can be picked off at each dressing with a forceps without removing the gauze. This is a painless procedure and does not interfere with the delicate newly formed tissue. As the dichloramine-T is not an aqueous but an oily solution, it does not tend to make the granulation-tissue edematous, but, rather, we note that it is of a very bright-red, healthy color and does not heap up. We feel that this dressing deals with the three essentials in the treatment of burns as efficiently, if not more so, than any other.

Case-report.—J. W., February 21, 1918. The patient fell with the forearm against the stove, causing a burn of the third degree, and tipped hot gravy over the arm, causing a scald about 8 by 5 inches. When he was seen next day, the blisters were broken and considerable discharge was present. The wound was cleaned with dry wipes and dressing-forceps. The edges of the wound were cleaned with gasolin. Paraffined gauze was fastened on with adhesive plaster. This was sprayed with 5-percent solution of dichloramine-T in

8. Communication from Capt. W. E. Lee, Philadelphia.

chlorcosane. Was dressed daily. The crusty discharge was removed with a forceps from the surface of the netting and the latter sprayed with 1-percent dichloramine-T solution. The dressings were painless and easy. On the tenth day, the scald-wound was healed and on the nineteenth day the burn-wound was healed.

Skingrafts

It has heretofore been considered impracticable to skingraft wounds that were not sterile, partly because the grafts would not take and partly because antiseptic dressings could not be used, for fear of destroying the grafts. We have found that it is not necessary, although it is to be preferred, to have the wound absolutely sterile. We get the wound as sterile as possible, lay our grafts and cover them with the paraffined netting spoken of above. This is left exposed to the air. Each day the discharge that forms is removed from the outside of the netting and the whole wound is sprayed with 1-percent dichloramine-T solution. About the tenth or eleventh day, the netting is removed without any difficulty whatever. It shows no tendency to adhere to the wound or the grafts.

We have had several good cases, but, two of them will serve to illustrate.

Case-report No. 1.—G. H. A., admitted to Toronto General Hospital, under Dr. F. N. G. Starr, on January 21, 1918. Seven weeks previously, he scalded his left leg to the knee. The wound became infected, and among others, the following dressings were used: moist boric acid, 1 : 100 bichloride of mercury, 1:100 carbolic acid, boric-acid ointment, ambrine, physiological saline solution, and Dakin's solution. None of these were efficient, and when the patient was admitted to the hospital, the most of the surface of the leg was devoid of skin and discharging a foul, purulent matter. It was cleaned and swabbed with 20-percent dichloramine-T solution, and he suffered for some hours. The next day, he told us the leg had not looked as well in seven weeks. We used 5-percent dichloramine-T solution daily, and as soon as the infection became controlled the skin grew in very rapidly. On the seventh and ninth days, a culture from the wound was sterile, and in the tenth day it was skingrafted. Daily dressings were done, each time removing the discharge that had come through the netting, without disturbing the grafts. At first, we had physiological saline solution sprayed on the wound every hour. We have since come to the conclusion that that is unnecessary. Daily applications of 1-percent dichloramine-T solution with an atomizer is all the dressing necessary to keep the grafts soft. On the eighteenth day, the netting was removed and the graft had practically all taken. This man walked out of the hospital about six weeks after the operation.

Case-report No. 2.—W. B., admitted to Ward A, Toronto General Hospital, January 21, 1918. His hand was crushed between steel rollers, the skin being pulled off and several of the phalanges fractured. The tips of fingers were all amputated and the hand was dressed with dichloramine-T solution. Pyocaneus-infection followed This was very difficult to clean up, but, when the wound was granulated over and all sloughs were removed, even when the pyocaneus was still present, we skin-grafted. This was covered with the netting, and dichloramine-T solution was applied daily. The graft took perfectly and in four weeks all dressing was removed from the hand.

We have no experience with the use of dichloramine-T in brain-work, but, Harvey Cushing[7] reports as follows:

At a casualty clearing station in France, in three months, they had 733 cases of wounds, with dural penetration. Among the first 44 cases, they had 24 deaths, or 54.5 percent. Among the second 44 cases, they had 18 deaths, or 40.9 percent. Among the third 45 cases, they had 13 deaths, or 28.8 percent.

He attributes the lowering of the death rate to four principal changes in their technic, namely: (1) the removal *en masse* of the fractured area of the cranium; (2) the probing of the wound in the brain for foreign particles with a soft-rubber catheter, instead of with the finger; (3) the removal of the disorganized brain-tissue by gentle suction through a catheter; and (4) the routine use of dichloramine-T. In speaking of the last point, he says:

"The use of watery solutions of antiseptics in the brain is disappointing, for, they lead to edema and swelling of the tissue and an increased tendency to herniate. It was not until Dakin's dichloramine-T came to be utilized as a routine during the latter weeks of our service that there was a

7. *Brit. Med. Jour.*, Feb. 23, 1918.

notable diminution in the number of infections.

"It is true that the technic of the procedure had greatly improved at this time and it is true also that we can record no thoroughly conclusive bacteriological studies, though cultures of many of the wounds and foreign bodies were made. With dichloramine-T in not a few cases in which an infected foreign body was removed and in which bone fragments as well gave an abundant growth, no symptoms whatever followed closure of the wound without drainage. In two instances, the cultures showed the presence of the pneumococcus in the ventricular fluid, and the only patients in the series who have recovered from active gas-infection of the brain were treatel with dichloramine-T."

Cushing used a soft catheter to inject a few mils of dichloramine-T solution to the bottom of the cavity and then moistened the surface of the external wound with it before sewing up.

Tuberculous Wounds

Our experience with the use of dichloramine-T in tuberculous wounds has been limited, owing to the unsatisfactory results obtained in a couple of cases some months ago. Following this, we treated some active tubercle-bacilli with dichloramine-T for varying lengths of time, by putting an emulsion of the bacteria on some dichloramine-T in a test tube. The chlorine from the dichloramine-T gradually infiltrated the emulsion. In three, five, fifteen, thirty, and sixty minutes, and, again in twenty-four hours, we removed part of the emulsion and injected it into guinea-pigs. Up to and including the thirty-minute case, the bacilli grew, but, from one hour and longer, the guinea-pigs tests were negative.

When we remember that it takes a 5-percent carbolic-acid solution with an equal quantity of sputum, intimately mixed, about twenty-four hours to kill the tubercle-bacillus, and that 2.5-percent carbolic acid will not even kill them[9], we can not help but feel that dichloramine-T is efficient also for tuberculous wounds. Further experiements are being carried on now.

Empyema of the Pleural Cavity

Our experience with dichloramine-T as a sterilizer for empyema-cavities has not been altogether encouraging. Two acute cases, following pneumonia, had a short convalescence that was very satisfactory. Three old cases, in which the cavity had been draining for from three to twelve years, were treated by means of the Estlander operation, and, shortly afterward, dichloramine-T solution was injected into the remaining cavities. The oldest case closed in a few weeks; in the second case, the cavity diminished to one-fourth the former size in two months. We are hoping it will close completely. The cavity in the third case is practically the same size as it was when we started the treatment. This patient had syphilis until recently, which may account for this poor result.

One gratifying point about the use of dichloramine-T in these cases is, that the patients all feel better and apparently there is much less toxin absorbed as long as the oil is being used.

Our technic has been, to insert a soft-rubber catheter into the cavity and inject through it from 5 to 20 mils of the oil. Then we have the patient moving slowly into different positions, in order to get the oil to flow to all parts of the wound. This dressing is done once a day.

From several of our cases, we have obtained a negative culture after several days' treatment; but, if we discontinue the injections for a few days, the bacteria again appear.

It may be that, if at the time of the Estlander operation a strong solution of the antiseptic were used before sewing up the skin wound or the cavity were packed with gauze soaked in the oil, the results would be a little more satisfactory.

Mastoiditis

From reports received from several of the ear-, nose-, and throat-men that are using dichloramine-T in mastoid infections, I gather that it also is effective in those conditions. Dr. Charles Clark tells me of three bad mastoid-cases that closed completely in eleven, twelve, and fourteen days respectively. He notes particularly the early disappearance of pus, the healthy appearance of the granulations, and the rapid closing of the wound.

Urethritis

I have just used dichloramine-T in one case of gonorrheal infection. In this case, I sealed the oil in the urethra and left it there for nine hours. The patient complained the next day of pain on micturition, but, I have been unable to find any trace

9. Kolle und Wassermann, "Handbuch der Pathogenen Mikroorganismen".

of gonococci in the smears since then. I would advise, instead of sealing in the oil, that it be held in for ten or fifteen minutes, only. It must be noted here that only solutions in chlorcosane should be used. Solutions in eucalyptol would cause irritation. Doctors Jones and Hair are going to use it in the Genitoryurinary Clinic at the Toronto General Hospital.

Diphtheria-Carriers

When Dakin first suggested the use of dichloramine-T as an antiseptic, he used it to disinfect the nose and throat of diphtheria- and meningitis-carriers. When the technic is properly carried out, this makes a very efficient treatment. Saline solution should be used first, to clean out the nares and throat, and then the dichloramine-T in 5-percent solution sprayed on with an atomizer every three hours. Spraying should be discontinued for twenty-four hours previous to taking a culture, and, if it proves negative, the spraying is again discontinued for twenty-four hours. In the case of getting two negative cultures, the patient may be considered no longer a carrier. We had a very good opportunity recently to test this out. Dr. W. C. Allison, of the Provincial Board of Health spent some weeks in a western town combating an outbreak of diphtheria. They used dichloramine-T in fifty-nine cases. These cases had been quarantined on an average of fourteen days and they were released after using dichloramine-T on an average for five days. Nurses gave all the treatments, which were carried out, not every three hours, but, only three times a day. Those who have worried over these cases for weeks, and maybe months, will realize with satisfaction how quickly these carriers were cleaned up.

Colonel Primrose, who has seen at first hand the results obtained by the originators of several of the modern methods of treating infected wounds, warns us that we must keep an open mind regarding this question. They all claim to get good results, and he has seen that they are doing so. All others do not get these good results, no doubt because they do not know or do not adhere to the proper technic. We know that dichloramine-T will sterilize infected wounds if it gets into every part of the wound and there are no foreign bodies present, and we feel that, as the technic is so simple and the results are just as good, we have in dichloramine-T an antiseptic that is, at the least, among the best.

I should like to thank Captain Roscoe R. Graham for inducing me to take up this study; Dr. F. N. G. Starr, for furnishing most of the clinical material and much encouragement; Captain Walter Campbell, for his help with the chemistry and laboratory-work, and Doctor Laughlen, for his assistance with the bacteriological work. Without the help of these, my work would have been without results.

Procaine-Anesthesia for Surgical and Dental Operations

By F. H. McMECHAN, M. D., Avon Lake, Ohio

PROCAINE is a low-toxicity substitute for cocaine for almost every form of local anesthesia (pro=for; caine=cocaine). It is the American *novocaine*, manufactured under the license of the United States Federal Trade Commission, a license which practically guarantees its purity, potency, and availability at a reasonable price.

Pharmaceutical Aspects

Introduced by Einhorn, in 1905, as novocaine, *procaine* is a synthetic monohydrochloride of para-aminobenzoydiethylaminoethanol. It crystallizes from alcohol in colorless needles. Its melting-pot is 156° C. It is soluble in equal parts of cold water and the solution has a *neutral reaction*. In cold alcohol, it is soluble in the ratio of 1 : 30. The solution can be heated to 120° C. without decomposition. Caustic alkalis and their carbonates precipitate the free base from the aqueous solutions in the form of a colorless oil, which soon solidifies to a crystalline mass. Alkaloidal reagents, such as potassium mercuric-iodide,

picric acid, and iodopotassium iodide solutions, produce precipitates even in very dilute aqueous solutions of procaine. While sodium bicarbonate dissolves in the aqueous solution without causing turbidity, it constitutes a disturbing ingredient and preferably is avoided. Solutions should be made with sterile, freshly distilled water or physiologic saline solution or modified Ringer's serum, and be kept in nonalkaline, nonactinic glass containers having air-tight stoppers.

Procaine powder and its solutions of concentrated strength are *nonirritating* to mucous surfaces, the cornea, sensitive wounds or other tissues, including nerves, Solutions possess *slight antiseptic* properties and may be *sterilized repeatedly* without, apparently, affecting their *analgesic effect*, and may, *without deteriorating*, be kept for *longer periods* than can other anesthetic agents. *After adrenalin has been added to the procaine solution, the mixture may be boiled for a very short time, only, as the adrenalin loses its activity by continued boiling and the drug itself becomes decomposed.*

Only *freshly* and *properly* prepared solutions can be used with any degree of safety. These should not come in contact with anything but the porcelain cups in which they are mixed, diluted, and sterilized and the syringes with which they are injected. The latter must be scrupulously freed from sterilizing fluids, such as alcohol-glycerin or solution of sodium carbonate.

Solutions are chemicaly changed by *air, heat, light*, and, especially, *alkalis*. Tablets, as marketed, as a rule, are sterile and should not be touched by the hands or nonsterile instruments, while their container should be closed air-tight immediately after use. Tablets readily become deteriorated by *air, light*, and, especially, moisture. Exposure must be guarded against when salt is used as an ingredient, because of its hygroscopic nature when not chemically pure. Tablets must be *white;* if *discolored*, they should be *discarded*, as their use involves danger. Ampules should be opened and their fluid contents handled under *rigid aseptic precautions.*

Solutions made with tablets or withdrawn from ampules must be *crystal-clear.* If they show even the slightest *pinkish discoloration*, they should not be used. The physiologic saline solution or modified Ringer's fluid, designed for preparing or diluting procaine solutions should be made, invariably, from *freshly distilled* and *sterilized* water and chemically pure and sterile ingredients.

Comparative Efficiency

Torald Sollman, (*Jour. Amer. Med. Ass'n*, Jan. 26, 1917, p. 216), in recent researches for the Council of Pharmacy and Chemistry of the American Medical Association, has formulated certain results from his studies of the comparative efficiency of local analgesics, based upon animal-experimentation and clinical observation, (*Charts 1 and 2*).

Rapidity of the Onset of Action.—This has no practical importance for infiltration and only slight significance for surface anesthesia. For the cornea, with the minimal effective concentration, the various anesthetics may be arranged under three groups:

Most-rapid: Tropococaine, alypin, quinine-urea.

Intermediate: Beta-eucaine.

Slower: Cocaine, procaine, holocaine.

Duration of Action.—This varies mainly according to the rate of absorptive removal. It is of some practical importance for surface and subdural anesthesia, but, not for infiltration-anesthesia, in which the duration can be prolonged at will by the addition of adrenalin, except with tropococaine. The time required for complete recovery after the application of the minimal concentration producing complete anesthesia of the cornea, was:

Ten to fifteen minutes: cocaine, tropococaine.

Twenty to thirty minutes: alypin, beta-eucaine, holocaine.

Fifty minutes: procaine.

Sixty-five minutes: quinine-urea.

CHART 1. EFFICIENCY OF ANESTHETICS IN INJECTION-ANESTHESIA.

A. Intracutaneous-method infiltration and injection.

Percentage		Efficiency-ratio
1-32	Procaine, cocaine, tropococaine, and alypin hydrochloride	1
1-16	Beta-eucaine hydrochloride	1-2
1-8	Quinine-urea hydrochloride	1-4
1-4	Apothesine, antipyrin potassium sulphate	1-8

B. Sensory Fibers of Nerve-Trunks

Percentage		Efficiency-ratio
1-4	Procaine, cocaine, tropococaine	1
1-2	Alypin, potassium chloride	1-2
2	Quinine-urea	1-4
8	Antipyrin	1-32

C. Motor Fibers of Nerve-Trunks

Percentage		Efficiency-ratio
1-8	Procaine, cocaine, tropococaine	1
1-6	Alypin	3-4
1-4	Potassium chloride	1-2
1	Quinine-urea, antipyrin	1-8

CHART 2. EFFICIENCY OF ANESTHETICS IN SURFACE ANESTHESIA.

A. Cornea; Surface anesthesia of mucous membranes

Percentage		Efficiency-ratio
1-2	Cocaine hydrochloride	1
1	Beta-eucaine	1-2
2	Tropococaine, alypin, quinine-urea	1-4
4	Apothesine	1-8
9	Procaine	1-16
10	Antipyrin	1-20

B. Frog skin

Percentage		Efficiency-ratio
1-16	Tropococaine	1 1-3
1-12	Cocaine, alypin	1
1-2	Procaine	1-5
1	Potassium sulphate chloride	1-12
2	Antipyrin	1-24
4	Quinine-urea	1-50

Alkalinization.—Sollman's results confirm those of Gros, that the addition of alkali increases very noticeably the efficiency of procaine, cocaine, and allied analgesics, doubtless because the free anesthetic bases penetrate more readily than do the salts, not only the motor nerve-trunks, but, also, the sensory fibers of the nerve-trunks, frog skin and cornea. On the other hand, no potentiation occurs after intracutaneous injection, evidently because this does not require penetration. Accordingly, the addition of sodium bicarbonate, as suggested by Gros, serves no useful purpose for *infiltration-* anesthesia. It may be of some use for *Intraneural* and possibly for *subdural* injections and is definitely useful for *surface* anesthesia. For these uses, the anesthetic should be made up in *double concentration* and be *diluted,* just before use, *with an equal volume of 0.5-percent sodium bicarbonate.* This increases the efficiency for the cornea as follows:

Cocaine, from one to two times.
Beta-eucaine, two times.
Procaine, from two to four times.
Tropococaine or alypin, four times.

This effects a considerable saving in anesthetic; but, it is uncertain as to whether or not it modifies toxicity. An alkali should not be added to holocaine or quinine-urea.

Adrenalin.—This agent, originally advocated by H. Braun, for prolonging the analgesia of procaine, acts solely by preventing the absorptive removal of analgesic drugs by virtue of its vasoconstrictor effect, and not because of any true synergism. The additional of adrenalin, (about 1 : 50,000) for injection-anesthesia (except with tropococaine, which destroys its vasoconstrictor action), prolongs the duration of analgesia, reduces the amount of procaine required, and diminishes the chances of systemic toxicity by delaying absorption. For *surface* anesthesia, adrenaline rather diminishes the penetration of procaine and, therefore, the efficacy of local anesthetics on mucous membranes. Its use for intraneural and subdural injection is of doubtful value. It is indicated, however, for securing a bloodless operative field.

Efficiency of Combination.—The efficiency of mixtures of local anesthetics, according to Sollman, corresponds to more or less complete summation without any potentiation. The single exception, experimentally, is the potentiation of potassium with certain other anesthetics, discovered by Hoffman and Kochman, which has been confirmed for motor paralysis, but, not for sensory anesthesia. Quinine-urea in combination with procaine, while not potentiating the immediate anesthetic effect, provides a period of prolonged analgesia, postoperatively, in certain otherwise painful areas and proves a desirable mixture in practice.

Conclusion

The consensus among most research-workers and clinicians is, that procaine, when injected, has the same efficiency as cocaine in obtunding peripheral nerve-endings or sensory and motor fibers of nerve-trunks, even when used in low-percentage solutions. Thus, a 0.24-percent solution is as immediately analgesic, intracutaneously, perineurally or intraneurally as cocaine, and a 1.5-percent solution suffices to obtund such thick nerve-trunks as the sciatics and sacrals in about ten minutes. However, when applied locally to mucous surfaces, the cornea, nasal membranes, pharynx, larynx, urethra or bladder, procaine solutions are only about one-third as efficient as cocaine, although *decidedly less toxic and virtually nonirritant.*

Systemic Effects

Ordinarily, the systemic effects after the injection and absorption of procaine are scarcely noticeable, neither the circulation nor respiration being unfavorably influenced. Usually the heart's action is entirely unaffected. Kymograph tracings of blood pressure and respiration exhibit virtually no change when from 0.15 to 0.2 Gram of procaine has been injected subcutaneously in rabbits.

Procaine does not produce mydriasis (except in toxic dosage), *disturbances in accommodation, nor does it increase intraocular tension.* The solutions and powder

not only are nonirritating, but, have been longation of the local analgesic power.

Procaine has a transitory vasodilator effect; however, this may be entirely counteracted by combination with adrenalin with consequent intensification and prolongation of the local analgesic power.

Toxic Symptoms

Following the injection of large doses in susceptible individuals, procaine may induce tonic-clonic spasms, together with opisthotonos, agitation, and excitement, together with accelerated and shallow breathing, resulting in respiratory arrest; or, vomiting, pallor, and circulatory disturbances of cardiac failure.

Liebl (*Beitraege z. Klin. d. Chir.*, 1907, *lii, p.* 244), experimenting upon himself, to test the toxic effects of procaine, after injecting 0.75 Gram of a 10-percent solution into his thigh, felt a sudden warmth in the whole body, especially in the hepatic region; also nausea and inclination to vomit, and general restlessness. Two minutes later, slight deafness occurred in his left ear; further, there was some disturbance of vision double vision being produced and accommodation being difficult in both eyes. Thirteen minutes after the injection, headache supervened and somewhat later a paresthesia in the radial region. Within half an hour, the symptoms had diseappeared.

While exhilaration regularly occurs after cocaine, procaine-"*jags*" are a rarity; still, they do happen occasionally, extreme *talkativeness* being the predominant symptom. *Hysterical seizures* have infrequently been reported as a complication of local anesthesia, and they may be of strictly neurotic etiology or may indicate a delayed toxic manifestation of procaine of undiagnosed endo- or myocardial pathology.

Fortunately, so far as clinical evidence and experience can predicate, *procaine is not a habit-forming drug.* This peculiar characteristic is of vital importance to surgeons, specialists, and dentists.

Comparative Toxicity

In the opinion of most research-workers and clinicians, procaine, after twelve years of experimental investigation and routine surgical and dental employment, still is considered as from one-fifth to one-seventh as toxic as cocaine. George B. Roth ("U. S. Hygienic Laboratory Bulletin" No. 109, Dec., 1916, and *Jour. Nat'l Dental Ass'n*, 1917), Robert A. Hatcher, and Cary Eggleston, (*Jour. Pharmacol. and Exper. Therap.*, Vol. vii., No. 7, July 1916), and J. Rilius Eastman, Bernard Erdman, and Harry K. Bonn, (*Ann. Surg.*, May, 1916), have recently reviewed the comparative toxicity of procaine and other local anesthetics in a comprehensive and painstaking manner and have separately arrived at about the same conclusions.

Summary of the Experimental Results in Animals

The relative toxicity of procaine and cocaine, as shown by animal-experiments, varies; the variant being dependent, mainly, upon the animal employed in the tests. The relative toxicity of procaine and cocaine for various animals, when given *subcutaneously*, is as follows.

Experimental animal.	Cocaine ratio	Procaine
Frogs (rana pipiens)	1.0	1.4
Mice	5.5	1
Rats	10	1
Guinea-pigs	10	1
Rabbits	5.3	1

Both cocaine and procaine *increase blood pressure* and *respiration* in *small doses* and *depress* in *large* doses. When given subdurally, the relative toxicity of cocaine and of procaine is virtually the same, as shown by the comparative effects upon blood pressure and respiration. Death in rabbits, after cocaine or procaine, usually is respiratory, but, from procaine, under certain conditions, death may be cardiac (Roth).

The toxicity of procaine is increased, but, in variable degree, by the previous administration of respiratory depressants (Hatcher, Eggleston).

Procaine leaves the blood stream quickly, it being fixed or destroyed in the liver; the weight of evidence pointing to its destruction in that organ (Hatcher, Eggleston). This experimental observation questions the deduction drawn by Morian, (*Zeitschr. f. Chir. No.* 28, 1915, *p.* 493), that procaine occasions albuminuria—a postoperative complication that he observed in a fairly large percentage of his patients that had been operated upon under local anesthesia.

Relation of Laboratory Findings to Clinical Observations

The toxicity of cocaine and procaine for man appears to vary even more widely than for the laboratory-animals. Toxicity for both depends upon the mode and site of injection, as well as upon the concentration of the solution and the amount of the drug employed. Occasionally, toxic symptoms may be owing to the accidental or inadvertent injection of procaine directly into the circulation, especially in highly vascular structures encountered in certain oper-

ative fields; or, they may be precipitated or intensified by some pathological condition of the patient under operation.

Individual susceptibility is marked both in animals and in man. In subjects having low blood pressure or cardiac disease, procaine, as well as all other analgesics, must be used with caution, inasmuch as the laboratory-experiments indicate a depressing effect upon the heart-muscle when large doses of procaine are given (Roth).

Geoffrey Marshall (*Trans. Anest. Sect., Royal Soc. of Med.*, 1917; *Amer. Jour. Surg.*, April, 1918), after an extended experience at an advanced casualty station on the Somme, has concluded that: *spinal anesthesia is especially dangerous for wounded soldiers whose hemoglobin test and blood-pressure reading indicate hemorrhage, actual or concealed; primary or secondary wound-shock; circulatory stasis, with deconcentration of blood volume; or cardiac depression from increased heart load.*

It is quite possible that a normal or subnormal hemoglobin-index and a normal or increased heart load, respectively, may become the determining factors of safety, or of danger, in obviating the occurrence of toxic complications under procaine-anesthesia.

Physiologic Antidotes and Restorative Measures

J. E. Engstad, (*Amer. Jour. Surg. Anest. Suppl.*, Jan., 1916, p. 5), has frequently reiterated his announcement, in 1910, that *ether is the physiologic antidote for cocaine- and procaine-poisoning.*

Local analgesics lower blood pressure, with a tendency to inhibit the complete systolic action of the heart, especially the right side. They also inhibit the respiratory function, by poisoning the respiratory centers of the brain: the heart becomes flabby and there is, also, an overstimulation of the accelerator nerves. When the right side of the heart does not synchronize in systole and diastole, this form of heart-block may be owing to the effect of local analgesics upon the bundle of His, by direct action of these drugs circulating in the blood. Professor Corbett, of the University of Minnesota, reports that: the injection of solutions of procaine directly into the veins of unanesthetized animals frequently produces toxic symptoms, manifested by tetanic spasms of the voluntary muscles of the back and by marked respiratory embarrassment. *In these cases, a fatal outcome can be prevented by the administration of ether.*

Ether is a rapidly acting, diffusible cardiac, vasomotor and respiratory stimulant; it increases blood pressure initially and apparenty has a *special antidotal effect upon the toxic elements of the diffusible alkaloids.* Ether is administered by the drop-method, as for surgical anesthesia, to the stage of stimulation. It is almost immediately effective and is equally as efficient an antidote for poisoning by camphorated oil.

Clinically, sufficient attention has been not paid to *fearful* patients, who, as a class, are prone to collapse or show toxic symptoms under local as well as general anesthesia. H. Scholz (*Beit. z. Klin. d. Chir.*, June, 1914), has observed that, while patients who *dread* operations may attempt to conceal their fear under a placid exterior, their real condition generally is revealed by some disturbance of visceral or vasomotor innervation, such as tachycardia, pseudoangina, polyuria, glycosura, diarrhea, angioneurotic edema, shallow and sighing respiration, pallor and dryness of the mouth. Such patients, as a rule, are the victims of some serious undiagnosed pathology. Thus, the socalled *hysterical heart* is almost always indicative of endo- or myocardial involvement dependent upon focal infection. Abnormal fear will precipitate *acapnia* under general, and reflex syncope under local anesthesia. Mere *fainting* must be differentiated from actual procaine-poisoning in susceptible individuals.

Hemorrhage during operation may so diminish the blood volume that an otherwise innocuous dose of procaine may precipitate toxic symptoms. S. Salinger, (*Ther. Gaz.*, Jan., 1918, and *Amer. Jour. of Surg., Anesthesia Suppl.*, Oct., 1918, p. 124), emphasizes the value of a preliminary injection of *pituitrin* (1 mil) in nasal and oral operations under general and local anesthesia, as a prophylactic measure against untoward symptoms, especially hemorrhage. Pituitrin, given intramuscularly, is, perhaps, the best circulatory stabilizer before and after operation.

Pursuing the handling of toxic conditions to a conclusion, C. W. Allen, (*"Local Anesthesia,"* 1914) thus recapitulates: "With the onset of the first symptom, immediately place the patient in a recumbent position

and lower the head; if the operation has been on an extremity, apply a constrictor proximal to the field; give aromatic ammonia or else amyl nitrite by inhalation; if the case seems severe, lightly narcotize with ether by the drop-method; use digitalis or camphor in oil by hypodermic injection, if the heart is weak; in a severe case, use infusion of saline solution (preferably containing pituitrin); should the respiration cease, artificial respiration should be resorted to and persisted in as long as the pulse or heart-beat is perceptible—or even longer, as there may be a chance of resuscitation. When the facilities are at hand, use the Meltzer-Auer endotracheal intubation for the purpose of maintaining prolonged artificial respiration.

Solutions.—The following percentage-solutions recommended by H. Braun have established themselves in routine use:

Solution 1.
Procaine ..... Gm. 0.25
Physiologic saline or Ringer's fluid ..... Gm. 100.0
Adrenalin solution (1:1000) ..... Gtt. 5

Solution 2.
Procaine ..... Gm. 0.25
Physiologic saline or Ringer's fluid ..... Gm. 50.0
Adrenalin solution (1:1000) ..... Gtt. 5

Solution 3.
Procaine ..... Gm. 0.1
Physiologic saline or Ringer's fluid ..... Gm. 10.0
Adrenalin solution (1:1000) ..... Gtt. 10

Solution 4.
Procaine ..... Gm. 0.1
Physiologic saline or Ringer's fluid ..... Gm. 5.0
Adrenalin solution (1:1000) ..... Gtt. 10

The 1-percent procaine-adrenalin solution serves almost all purposes and is most suitable for general practice. Without fear of toxic secondary effect, 21.5 Grams of procaine (250 mils of a 0.5-percent or else 1.25 mils of a 1-percent solution) and more may be injected. If a 2- or 4-percent solution is employed, a dose of 0.8 Gram of procaine (40 to 50 mils of these solutions, respectively) should not be exceeded; and, for injections into tense or vascular tissue, such as the gingivæ, a less dose will suffice. *On the whole, little attention need be given to the dosage of procaine, unless, as Braun warns, an attempt is being made to operate under local anesthesia in all but hopeless cases that present an enormous operative field. To this feature of procaine, the remarkable progress of local anesthesia is in large measure due.*

Manufacturers of procaine now market tablets of varied formulas for preparing percentage-solutions. Some of these formulas are also marketed in ampules, containing procaine or procaine-adrenalin solutions ready for use or dilution, to meet the requirement of different injections and methods.

The more popular of these formulas are the following:

Formula 1.
Procaine ..... Gm. 0.125
Adrenalin ..... Gm. 0.000125
This tablet, dissolved in 25 mils of physiologic saline or Ringer's fluid, gives a 0.5-percent solution; in 10 mils, a 1.25 percent, and in 5 mils a 2.5 percent solution. These solutions correspond to those advocated by Braun.

Procaine ..... Gm. 0.1
Adrenalin 0.00025
This tablet dissolved in 100 mils of physiologic saline or Ringer fluid gives a 1 percent solution for perineural or intraneural injections.

Formula 3.
Procaine ..... Gm. 0.05
Adrenalin 0.000083
Three tablets dissolved in 3 mils of serum give a 5-percent solution useful for lumbar anesthesia.

Formula 4.
Procaine ..... Gm. 0.02
Adrenalin ..... Gm. 0.00005
This tablet dissolved in 1 mil or 2 mils of physiologic saline or Ringer fluid gives a 2- or 1-percent solution, respectively and is a routine dental formula.

Formula 5.
Procaine ..... Gm. 0.015
Adrenalin ..... Gm. 0.00005
This tablet dissolved in 1 mil physiologic saline or Ringer fluid gives a 1.5-percent solution.

Formula 6.
Procaine ..... Gm. 0.05
This tablet dissolved in 1 mil physiologic saline or Ringer fluid gives a 5-percent solution; in 2.5 mils a 2-percent solution. Adrenalin solution (1:1000) may be added in drops as desired.

Formula 7.
Procaine ..... Gm. 0.01
Adrenalin ..... Gm. 0.0002
This formula is marked as a pluglet for pressure anesthesia in dentistry.

Procaine soluble in oils also is available for use in oto-rhino-laryngology, usually in 10-percent solution for local application, spraying, and inhalation.

Procaine *nitrate*, having the same action and uses as the hydrochloride, is preferably

used in combination with the silver salts, with which it forms no precipitate. It is efficient and dependable for this purpose, in 3-percent solution.

For *internal use*, procaine is preferable to cocaine, because of its less toxicity and the fact that it is not habit-forming. Up to 0.5 Gram, it may be administered to adults.

In preparing solutions from tablets with physiologic saline solution or Ringer's fluid, it is advisable to counteract any alkali effect by adding 3 drops of official dilute hydrochloric acid to 1000 mils of solution.

Intestinal Disinfection with Chlorazene*

By P. CARNOT, M. D., and TH. BONDOUY, M. D., Paris, France

WE know how defective still are the methods of intestinal disinfection. Calomel, betanaphthol, benzonaphthol, salol, and the other but slightly soluble phenol compounds have been employed with relative and often disputed success. Furthermore, disinfection by means of bacterial intestinal therapy (with the lactic-acid ferments), has not given the results that we expected from it. Hence, the problem remains an open one, yet, it is one that still has an importance of the first order.

We have tried to utilize as intestinal antiseptics the chlorine derivatives known for a long time in the chemical laboratories, but only recently studied clinically by Chattaway, Dakin, and others as to their utility in disinfecting wounds.

These compounds, in which the chlorine is held in a nitrogen grouping, have the advantage of joining a feeble toxicity to an antiseptic power of high degree. Their slow decomposition, during which the alkaline hypochlorites are liberated, confers upon them an indirect oxidizing power and increases their microbicidal action.

The chloramines which were selected for experiment were the sodium paratoluenesulphochloramide (chlorazene)[1] and paratoluenesulphondichloramine, or dichloramine-T. Chlorazene, which we are employing, is a white crystalline powder, nearly inodorous when unaltered, quite stable in the dry state, very soluble in water, while its solution remains stable for a considerable time in the presence of light. It is prepared, as a rule, by allowing sodium hypochlorite in alkaline solution to act upon paratoluenesulphonamide, the latter a product derived from a residue in the preparation of saccharin; hence, its facility of preparation and its cheapness.

We will epitomize (A) our experimental researches, and (B) our clinical researches.

A. Experimental Researches

First of all, let us determine (1) its bactericidal and antiseptic power; (2) its action upon the organism and, notably, its general and local toxicity; (3) its fate in the digestive canal, particularly the action of its diverse secretions upon the substance, and, reversely, its action upon these secretions; (4) the conditions capable of preventing its rapid absorption owing to its great solubility, and of maintaining it for a sufficiently long time in contact with the intestinal contents on which we wish it to act.

1. *Bactericidal Action.*—According to the experiments of Dakin, chlorazene can be utilized in a concentration much greater than the hypochlorites (i. e., of 2 to 4 percent). Its action is similar to that of the hypochlorites, but, its antiseptic power is superior—four times greater in an equivalent molecular concentration.

Staphylococci suspended in water are killed in two hours by a concentration of 1:1,000,000. In the presence of albumin (horse-serum), the concentration necessary to be bactericidal is 1:2,500. On the other hand, the bacillus pyocyaneus, the bacillus of Eberth, and the bacillus coli, are more resistant than the staphylococcus, while the bacillus perfringens and the streptococcus are more easily destroyed.

According to our experiments with various intestinal microbes, we have observed that cultures of the bacillus typhosus and paratyphoid A and B bacilli are

*Reprinted from *Paris Médical* for December 7, 1918.

[1]In translating the article, we have used the word Chlorazene for this body, this being the name by which it is most generally known in this country.

destroyed at the end of twenty-four hours, beginning with a concentration of 1:5,000; at 1:10,000, cultures still develop, but, they are feebler than the control-cultures and the motility of the different organisms disappears completely.

There is experienced more or less difficulty in implanting the colon-bacillus on bouillon in the oven at 37° C. at 1:10,000, 1:5,000, and 1:2,000, while no culture at all forms at 1:1,000. The results are identical when implanting directly from the stools. In bile and pancreatic juice, even with a solution of 1:1,000, while no putrefaction occurs, there still results a culture.

With amebic dysentery, a solution of 1:2,000 has no effect either upon the life or the motility of the amebas.

The deodorizing action of chlorazene, even in a non-sterilizing dose, is twice as great upon the different cultures of the intestinal microbes, as is also the case with many of the other chlorine compounds.

2. *Toxic Action, General and Local.*—Before administering the substance, it is necessary to determine its general toxic power, as well as its local harmful action upon the mucosa. Its toxicity is feeble. A rabbit tolerates more than one Gram per kilo-weight given subcutaneously (Daufrèsne). We have caused a guinea-pig of 400 Grams to swallow 0.2 Gram (3 grains) without bad results (approximately 0.5 Gram per kilo), this corresponding to a dose of about 30 Grams for a man of average weight. This slight toxicity renders it unnecessary to investigate the experimental lethal dose.

The local causticity likewise is negligible, and is much less than that of the hypochlorites, even when these are neutralized with boric acid (Dakin) or with sodium bicarbonate (Daufrèsne). Dakin insists that, the chlorine being already attached to nitrogen, chlorazene has not, like the hypochlorites, the power of destroying necrosed tissue. This fact, important for the dressing of wounds, has for us but a relative interest.

On the tongue, the contact of powdered chlorazene is not caustic, although a moderate and quite endurable chlorine-taste is quickly perceived.

In the stomach, the ingestion of the powder in a cachet or tablet generally causes no disagreeable sensations. In some sensitive hyperchlorhydrics, the substance thus ingested, gives rise to a slight burning sensation; but, ordinarily, patients, even those suffering from gastric or intestinal disorders, experience no trouble after the administration of several consecutive doses of 0.2 Gram (3 grains) each.

Thus, then, we may, without fear, prescribe chlorazene in quite large doses internally, even for subjects having a sensitive digestive tract, yes, even for patients suffering from enteritis, and who so often are sensitive to medicaments.

3. *Reciprocal Action of chlorazene and the Digestive Juices.*—(a) It is important to study *the fate of chlorazene when in contact with the various digestive secretions.*

To follow the possible decomposition of chlorazene, with the release of chlorine, we have utilized a very sensitive reaction, one capable of detecting traces of free chlorine. This reagent is composed of

Zinc Chloride	1 Gram
Starch or rice powder	1 Gram
Water	100 Grams

This is boiled for fifteen minutes. After cooling, we add 1 Gram of potassium iodide, then strain through fine linen. Traces of free chlorine cause an intense blue coloration, owing to the liberation of iodine, which thereupon reacts with the starch.

A solution of chlorazene slightly decomposed by exposure to the air sometimes gives with this reagent a very slight blue coloration.

With the saliva and a drop of the reagent, chlorazene gives at once, at 37° C., a blue coloration, this disappearing spontaneously at the end of five hours and reappearing after the addition of a fresh drop of the reagent. Upon the addition of a sufficient quantity of the reagent, the coloration persists for more than twenty-four hours. Hence, the saliva decomposes chlorazene by liberating small quantities of chlorine, but, this decomposition is, as a matter of fact, a slow and moderate one.

With pure gastric juice, obtained by means of a test meal, having a total acidity of 1.90 Grams per liter, 0.05 of chlorazene plus a drop of reagent, plus 20 mils (cc.) of the juice, produces instantaneously an intense blue coloration. This coloration disappears spontaneously when there is only a small quantity of the reagent and it reappears upon the addition of new. This forms, apparently, a series of organic compounds that are absorbed by a certain

quantity of the chlorine; hence, the necessity of protecting chlorazene from the intense action of the gastric juice. A similar action is observed with a dilute solution of hydrochloric acid. Furthermore, the gastric juice precipitates chlorazene in aqueous solution. These two reasons make it necessary to protect the chlorazene from the action of the gastric juice while it passes through the stomach.

With the duodenal juice, as obtained by duodenal lavage, rich both in bile and pancreatin, and strongly colored a brilliant green by the bile, the addition of chlorazene quickly produces a green coloration by the oxidation of the bilirubin present. We shall see that, by slowing this action, we obtain the series of intermediate colors characteristic of the Gmelin reaction. This reaction is particularly sensitive for detecting the oxidizing action exercised by chlorazene. With the reaction of the free chlorine, we obtain an immediate intense blue coloration, this changing at the end of two to three minutes to salmon-red.

Hence, chlorazene is decomposed slowly by the different digestive juices. The liberation of a small quantity of free chlorine causes a prolonged oxidizing action, as demonstrated by the oxidation of the biliary pigments.

b. It is important to observe *the effect of the chlorazene upon the different digestive ferments.* In Mett tubes with ovalbumin or coagulated serum, the pepsin of the gastric juice preserves the same activity as in culture-tubes in the presence of chlorazene in 1:2,000 solution; with chlorazene present in a concentration of 1:1,000, the peptic action is diminished by one-half. It disappears at a concentration of 1:500.

In the pancreatic juice, in the same manner, chlorazene, 1:2,000, does not modify tryptic activity. This is reduced by four-fifths in a solution of 1:1,000 and suppressed at 1:500.

4. *Method of Physical Fixation of the Chlorazene for Slowing Its Absorption.*—The antiseptic, deodorant, and oxidizing action of chlorazene upon the intestinal contents can not be utilized for disinfection of the intestine without finding a process to maintain the chlorazene in prolonged contact with the intestinal contents while preventing its absorption.

We know that, since the days of Bouchard, we have been compelled to utilize feebly soluble disinfectants as intestinal antiseptics, in order that their action may be prolonged during the time necessary for their dissolution; but, it does not seem easy to engage chlorazene in insoluble combination capable of fulfilling this purpose. Therefore, we have tried by purely physical processes to fix chlorazene with diverse insoluble bodies to retard its liberation and, furthermore, to prolong its effect. We have studied three physical methods of fixation, all of which have given results: the employment (1) of lanolin, (2) of charcoal, and (3) of mucilage (gelose).

1. The employment of *lanolin* was suggested by the well-known property of this substance of binding a large percentage of water. Hence, we have incorporated in a small amount of lanolin the chlorazene or a solution of it, which we wish to use Subsequently we may give to this mass, if it is a little too soft, the consistency of pills, by the addition of cacao-butter or magnesia. The pills thus prepared have been tested by immersion in water, in the gastric juice, and in the duodenal juice. We have demonstrated that their disintegration and decomposition is very much retarded. The test for chlorine, particularly, does not indicate the presence of free chlorine in the gastric juice before the expiration of a full hour and of an hour and a half in the duodenal juice, instead of instantaneously.

One even may fear that the goal has been passed by and that the chlorazene has become too resistant to solution and decomposition and that in the lanolin it loses in the same degree part of its antiseptic activity.

2. By means of *charcoal* (whose power of absorbing various substances is well known), we have succeeded in securing a fixation that satisfactorily accomplishes the end sought. A powder consisting of a mixture of chlorazene and willow- or black animal-charcoal is inodorous and tasteless, and remains so even after exposure to the air and light for a long time, the charcoal acting probably at the same time as a fixing and reducing agent. In the presence of the gastric and duodenal juice, decomposition, with liberation of small amounts of chlorine, does not occur until after two hours. This decomposition continues for twenty-four hours.

Further decomposition is very slow and very prolonged; consequently, it is utiliz-

able in therapeutics for intestinal disinfection. Furthermore, this form of administering the chlorazene is most readily prepared, since it merely has to be saturated with the charcoal, while this powder may be dispensed in cachets.

3. With *gelose* (mucilage) (the water-binding property of which is well understood, and which swells on absorbing water or aqueous solutions, and which keeps for a long time, even when subjected to trituration and to the movements of the digestive tract), we have accomplished the absorption of strong solutions of chlorazene. It is necessary to reduce this gelose to a fine powder, in order that, when swelling in water, it may retain but a small quantity of the substance the progressive liberation of which is desired.

The procedure that we recommend consists in drying, in the oven at 54° C., gelose impregnated with chlorazene solution. The gelose, when dried, is rendered easy of reduction to a fine powder in a mortar. In this form, it can be used in cachets or in tablet form.

The characteristic of this physical fixation consists in the slowness of the liberation and of decomposition of the chlorazene.

In the gastric juice, the tablets are disintegrated very rapidly. The gelose swells and forms a mucilaginous mass at the bottom of the tube, and is penetrated with difficulty by any fluid. Addition of the chlorine-reagent indicates only a slight liberation of chlorine. Moreover, the blue color is not produced, except on the outside of the mucilaginous mass. Also, the setting free of the chlorine continues for a long time and is renewed every time that the test tube is shaken.

The condition is the same with duodenal juice colored with bile. This in itself serves as an indicator of the oxidizing action of free chlorine. The yellowish-green bile of the duodenal juice, withdrawn directly with a tube, is oxidized only on the surface of the mucilage. It passes through all the color changes, thus indicating oxidation of the biliary pigment; a magnificent Gmelin reaction thus is staged upon the surface of the gelose plug, with its chlorazene—these colors ranging from red and violet to the natural green of the liquid. Sometimes the oxidation is pushed even further, and the following day the bile becomes completely decolorized; however, this unusual action is produced only by certain specimens of duodenal juice. In short, the mucilage preserves the gelose mixture from the attacks of the digestive juices, the decomposition taking place only on its surface. Incorporation of the chlorazene in the gelose, therefore, presents marked advantages for the purpose aimed at.

Now let us see the therapeutic results obtained with these diverse preparations.

B. Clinical Researches

We have generally used, for intestinal antisepsis, 0.2 Gram (3 grains) of chlorazene within every twenty-four hours, divided into four doses of 0.05 gram (3-4 grain), but we may go much further than this and easily double these doses.

In conformity with the preceding remarks, the chlorazene is given in the following combinations, dispensed in cachets or in tablet form:

1. With animal-charcoal:

Chlorazene	0.05 Gram
Powered animal-charcoal	0.30 Gram

2. With gelose:

Chlorazene	0.05 Gram
Powdered agar-agar	0.30 Gram

3. With lanolin:

Chlorazene	0.05 Gram
Lanolin	0.05 Gram
Magnesia	enough

This last formula seems to be the least desirable of the three. Other methods of preparation are still under investigation.

We have employed this remedy in a number of cases where we desired to disinfect and deodorize the stools, as in simple gastric distress, acute enteritis, bacillary dysentery, and affections resulting from the group of typhoid organisms.

1. In certain cases of *gastric disturbance*, often combined with a not clearly determined intestinal infection, but, characterized especially by fetid stools, by profuse diarrhea, coated tongue, and fetid breath of intestinal origin, the administration of 2 to 4 Grams (3 to 6 grains) of chlorazene has promptly produced marked relief, as, first of all, indicated by the deodorized stools. The breath soon loses its fetid character, while the intestinal phenomena, particularly the diarrhea, diminish.

For example, in one of our patients at the Hospital Tenon, who, on the 12th of September, voided eight stools of a very fetid odor, with the corresponding symptom-picture, the ingestion of 0.2 Gram of

chlorazene per day, given in four daily doses, brought about at the end of two days such a modification that the number of stools was reduced to two, being of pasty consistency and without odor. This deodorization was remarkable, in the sense that theretofore the stools filled with stench the little room in which the patient was isolated, and that two days later the stools had completely lost this character. In this patient, on two occasions we have made determinations, by Folin's method, of the urinary conjugate sulphates. These, on September 13, were 0.225 Gram per liter, and, on the 16th, 0.178 Gram.

In a second case, the patient was a physician, under treatment in the Pantheon Center, who had diarrhea, a coated tongue, fetid stools, was in bad general condition, and had an evening-temperature of 39.5° C. After giving him the chlorazene-agar tablets for three days, the symptoms were relieved; the infectious diarrhea had disappeared, the stools were odorless, the temperature had fallen, and the general condition was improved in a corresponding manner.

In a third case, occuring in the military hospital at Tenon, there was present profuse diarrhea, not identified bacteriologically, to the extent of from 10 to 12 very fetid stools every day. After five days of treatment, there were but two, and that nonfetid, stools. The conjugate sulphates had diminished, from 0.274 Gram, to 0.162 Gram, without any modification of the dietary regimen.

We had similar results in a series of summer diarrheas of undetermined origin, in which the antiseptic in question constantly brought about a reduction of the diarrheal conditions and effected deodorization of the discharges, together with immediate improvement in the general condition.

2. In a case of *bacillary dysentery*, in which there were, daily, more than thirty profuse mucous stools mixed with blood, with consequent tissue dehydration, violent abdominal pains, tenesmus, and considerable nervous prostration and a very bad general condition, the administration of the chlorazene mixture brought about, at the end of three days, a reduction to three pasty and only slightly bloody stools. The patient took but two small doses (0.12 Gram). A recurrence occurred after a few days. We then administered chlorazene, both by mouth and by rectal irrigation in agar jelly. Two days later, he had only two soft molded stools.

In another case of dysentery of the Shiga type, with very profuse (twenty-five a day) and very bloody stools, rich in mucus, with very intense abdominal pain and extreme excitement, besides insomnia and a bad general condition, the internal administration of chlorazene, which we still were giving in very small doses, produced a notable reduction of the number of stools, these having lost in a short time their dysenteric character, and having assumed a pasty consistency, then a normal one after nine days of treatment. The general condition was ameliorated very rapidly.

3. By contrast, in several cases of *amebic dysentery*, the administration of chlorazene in gelose by the oral and the rectal routes did not suffice to produce the disappearance of dysenteric stools nor of the amebae in the stools.

4. In several cases of *intestinal toxic-infectious trouble*, with constipation, chlorazene has given equally good results. We will cite, as an example, the case of an old victim of amebic infection, attacked by postdysenteric enteritis, together with constipation and autointoxication. The evening temperature oscillated between 38 and 38.5° C. After September 13, there were observed a coated tongue, loss of appetite, and a bad general condition. October 4, we gave 0.25 Gram of chlorazene. After that, the evening temperature did not go beyond 37.3° C.; it was only 37.1° C. the next day, and 36.9° C. the day following. Since then, the improvement has continued.

5. In a case of *paratyphoid fever, type B*, with constipation, methodical disinfection of the intestine with chlorazene produced, in three days, a notable lowering of the temperature, but, which, after several days, mounted again when we stopped giving the medicament. The result was good and the attack was shortened; still, it would be foolish to conclude from this single case that our treatment would cause a modification of the progress of typhoid infections.

6. We have used chlorazene as an intestinal disinfectant in two cases of *catarrhal icterus*, with complete decoloration of the discharges and very fetid stools, such as are habitual in these cases. In these two cases, deodorization of the stools was very rapid from the first, and they lost their

fetid character, although the diet was not changed; however, the duration of the icterus did not appear to be modified.

7. In a certain number of cases *of chronic enterocolitis* of various character, either with diarrhea or with constipation, the administration of chlorazene has not seemed to modify much the clinical picture. Nevertheless, the medicament has been well tolerated, and no painful cramps have occurred, despite the hypersensitiveness of the intestine in this condition. In certain forms of chronic infectious enteritis, the problem still remains under investigation.

Conclusion

To sum up: Chlorazene is a nontoxic substance, well tolerated by the intestine, is decomposed but slowly in the digestive canal when the drug is incorporated with various absorbent bodies, and has remarkable bactericidal, oxidizing, and deodorant properties. We have given such mixtures, with conclusive clinical results, in a series of intestinal troubles characterized by the predominance of toxic-infectious symptoms and by fetid stools.

This study, it appears, should be followed up in numerous cases in which it is of value to have at command a serviceable intestinal antiseptic, and, without deceiving ourselves further with the chimerical hope of rendering the intestine antiseptic. But, the diminution of the microbian processes in the intestine and of the fetor of the stools and the amelioration of the general troubles consequent thereupon already is an important therapeutic result of the employment of chlorazene as here recommended.

After Thirty Years—X

Notes and Reflections on Life and Work

By WILLIAM RITTENHOUSE, M. D., Chicago, Illinois

(Continued from January issue, page 29)

A Constipation-Clinic

SOME time ago, a colleague said to me: "I am at my wits' end. I have a patient afflicted with chronic constipation, and the case has floored me. Despite all that I have been able to do for him, he is gradually getting worse and I am beginning to fear serious results. He has got to the point where an enema will not always empty the rectum, and every few days he has to resort to mechanical evacuation with the finger. This leaves him utterly exhausted and the parts inflamed and painful. The trouble is aggravated by the fact that he has to take a little morphine for chronic bronchitis. I should like to bring him to you for a consultation."

So, the patient was brought to my office for a thorough investigation. I found him to be a man of 55, sparely built, and of sedentary occupation. His trouble had been coming on gradually for four or five years. After a thorough examination, I summed up his condition as follows:

1. His bowels would not move without his using a large amount of water from a fountain-syringe. He had tried several systems of socalled "internal bathing", as advertised in the newspapers, the result being that he had overdistended the rectum, thus destroying its tone and dulling its sensibility so completely that now very often even a large enema would fail to empty it and he was obliged to aid with the finger.

2. The anal sphincter was so tight that the index-finger could be passed only with difficulty, and there were a number of little fissures or tears in the mucous membrane that were inflamed and painful.

3. He had abused cathartics of every kind, until they almost refused to act.

4. He was not drinking enough water.

5. He was not eating suitable food.

6. He was in the habit of not going to stool unless he felt the call, consequently, sometimes going four or five days without an evacuation, which, naturally, resulted in an impacted rectum.

Then I gave the man a little talk, in substance, as follows:

A Heart-to-Heart Talk to a Patient

"You are the victim of a lot of bad habits. In the first place, bad habits of your own, which eventually have caused bad habits in your bowels. For, constipation is simply a set of wrong habits on the

part of the intestinal canal. The only hope for a cure for you lies in your trying to bring about correct habits in your bowel, by yourself establishing correct habits. Almost any problem can be solved, if adequate means are employed. You have used a great many means, and some very drastic ones, but, you have not used them rightly, and, consequently, they have not been adequate to attain the desired result. You must cut out all efforts at self-cure, based either upon advertisements or the advice of friends, and put yourself unreservedly into the hands of your doctor. If you had pneumonia, you would not think of trying to manage your own case, because you would realize that the problem was too hard for you. Well, you have just as hard a problem on your hands now. You can cooperate better with your doctor if you understand the conditions that lie at the bottom of your trouble.

"In the first place, your rectum ought to be an elastic muscular tube one and one-half inches in diameter, and so sensitive that as soon as fecal matter descends into it you would feel a sense of discomfort—a call to empty it. Instead of this, you have overstretched your rectum with large injections of water and with large accumulations of fecal matter until it no longer is a snug elastic tube, but, a huge flabby pouch four or five inches in diameter, and capable of filling the pelvis. This overstretching has destroyed its sensibility so that, when fecal matter descends, you do not feel its presence. Its contractile power also is weakened, so that now there is little expulsive force.

"Another harm done by the water is, that your rectum and colon are dry. It is a well-known fact that the presence of water stops the natural secretion from the mucous membrane. For example, if you are eating a dry biscuit, the salivary glands pour out an abundance of saliva, to moisten the food and lubricate it for being swallowed easily. But, wash it down with a swallow of water, and note what happens. At the next mouthful of the biscuit, the saliva will not flow. The salivary glands were inhibited by the water, and, for the time being, they cease to act. The colon and rectum behave in a similar manner. In normal conditions, the lining of the bowel secretes a mucus that keeps the stools soft, lubricates them and makes their passage easy. But, flood the bowel with water every day, and, this secretion of mucus stops and severe constipation is the result.

"Now, nature's power of recovery is so great that, if you stop overstretching the rectum, it will gradually resume its natural tonicity and contract down to the normal size. If you keep it empty, it will gradually recover its natural sensibility, so that you will feel the impulse to go to stool whenever fecal matter descends into it; and, if you stop flooding the rectum and colon with water, they will in time resume their natural secretion of mucus. Without strict attention to these three points, you can not hope to be cured. However, all this will take time, and in the meantime you will need the doctor's help to guide you while you are bringing back normal conditions. You must drink more water, not alone now, but, every day for the rest of your life. You must avoid constipating foods and eat those that have a laxative tendency, especially fruits and vegetables, and, in determining your diet, get your advice from your doctor, instead of from the newspapers. Some of the advice given by the latter is good, some of it is bad. For example, most of them advise the eating of bran. Now, bran with most persons, will at first relieve constipation, and, with a few, may, perhaps always, produce that effect; but, there are many individuals with whom it soon loses that effect and, if persistently used, it will bring about a very obstinate form of constipation. The rough bran acts as a mechanical irritant to the intestinal mucous membrane, and at first this produces decided activity; but, after a time the membrane refuses to respond and, like the overtired horse, pays no attention to whip or spur. I have seen some very obstinate cases of constipation in bran-bread-enthusiasts.

"You will have to use laxative medicines for a certain time; however, this will call for the greatest care and judgment, otherwise, you will get harm from them, instead of good. That was the trouble with you in the past. You abused these aids for want of proper instruction. In this matter, above all, you must be guided by your physician.

That Spastic Sphincter.

"Then there is that tight sphincter. As long as that remains in its present condi-

tion, you will not succeed in overcoming your constipation. It is absurd to expect a hard, dry bolus of fecal matter two inches thick to pass through a sphincter that hardly will admit the index-finger. You can have that sphincter stretched under anesthesia or you can get a set of rectal dilators and learn to use them. I think the latter the better plan, for, then you have your future in your own hands, while the dilatation under anesthesia may be a failure. If, under the latter, the muscle is not stretched thoroughly enough, it soon becomes as tight again as ever; while, if overdone, fecal incontinence may result. It is true, the dilators may have to be introduced at intervals for the rest of your life; but, then, considering the eminently satisfactory result, this constitutes no real hardship. After dilating the sphincter properly, the good effect may last anywhere from three months to three years, according to the size and strength of the muscle.

"For a while, at least, you must go to stool three times a day or oftener, whether you feel the impulse or not, so as to make sure that the rectum is kept empty. A good time to go is about an hour (or less) after each meal. The eating of a meal starts up peristalsis in the bowels, and, by going regularly at this time, a correct habit will gradually be formed. Of course, you will not bring on defecation each time, still, you are giving the opportunity—which is the great point. Another help is, to drink a glass of cool (not cold) water about ten minutes before going to the closet. This is a valuable aid to most people. While the injecting of water into the colon stops the secretions, taking the water into the stomach does not have that effect. Rather, it seems to stimulate for a short time peristalsis as well as secretion. The effect is analogous to the profuse outpouring of perspiration so often observed after one's taking a drink of water on a hot day in summer. Then, aside from the immediate effect, it is very important, for overcoming constipation, to keep the body-fluids well diluted by drinking four or five glasses of water every twenty-four hours. It is better to supply one's self with some good spring-water. The cost is small and the satisfaction great. The city-water often is impure, and the chlorine at present added to it by the health-authorities is injurious to some people. I have ample proof of this in my own person, as well as in the case of many of my patients. A pure spring-water, such as that of some of the Waukesha springs, is better than distilled water and much better than mineralized water."

As I finished, the patient remarked: "I recognize the force of all that you have said, but, I should like to have it in some permanent form for my future guidance. Can not you write it out for me to keep?" He was assured that this would be done.

He then continued: "There is on thing more about which I am not clear. You say that I must not take large enemas nor use the finger to empty the rectum when it becomes blocked. I can see the importance of this, yet, what am I to do?"

I answered, "Provide yourself with a piston-syringe (not a bag-syringe) holding about 2 ounces, and also a set of 4 rectal dilators. Inject into the rectum 1 ounce of plain warm water. This is not enough to do any harm by the distention. Hold it one hour, to soak and soften the mass in the rectum. While thus waiting, lie down on your left side and introduce the dilator. Select one about 3-4 of an inch in diameter, lubricate it well with vaseline, and introduce it into the rectum by slow (*very slow*) and steady pressure. The object is, to tire out the muscular fibers of the anal sphincter without producing little tears in the mucous membrane. Make this your rule: If it begins to hurt, you are pushing too fast; you are tearing the mucous membrane, and you will pay the penalty in pain and soreness for some two days. Keep up steady pressure just short of actual pain. If your arm does not become tired out, keep this up till the end of the hour. If the dilator passes through the sphincter, let it remain in place till the end of the hour. Then remove or expel it and go to stool. You now may empty the rectum completely, or perhaps only partly so, if the feces are very hard. In that case, inject another ounce of water and again lie down for another hour, after which you will surely succeed.

"Now, to prevent a recurrence of such an accumulation, you must faithfully carry out the following rules: (1) Take enough laxatives to keep the discharges soft. (2) Keep the rectum empty. (3) Keep the sphincter dilated to a normal size. (4)

Eat suitable food. (5) Drink plenty of water.

"As for the laxatives, you will need your doctor's guidance. He will give you about four different kinds, so that you will not take any one of them so often as to get used to it and have it lose its effect. As stated before, go to the closet three times a day about one hour after each meal—oftener, if you feel the inclination. Take one of the laxatives just after going to stool in the morning. That should act inside of twenty-four hours. If it does not, take a large dose of one of the others. If an action is had, take the laxative only every other day, and, later, every third day, continually changing from one kind to the other. The dilator should be introduced every day, until it passes easily, and then at gradually lengthening intervals. If it leaves the parts painful, you have employed too much force. Then give the anus a rest for a few days."

The Medicinal Course

The four laxatives we selected for this patient were:

(1.) Phenolphthalein, 2 to 5 grains. (2) Waugh's anticonstipation granules. (3) The old standard A. B. S. and I. (4) The old Hinkle's formula. The latter three are quite similar, merely varying the proportions of the main ingredients, while Waugh's formula contains, in addition, emetin and bilein.

We began with 5 grains of phenolphthalein, with a glass of water, at 11 o'clock in the forenoon. Twenty-four hours later, there had been no action, so, we gave 8 of Waugh's granules. About two hours later, just after the noon meal, there was a moderate action from the phenolphthalein, and that evening at bedtime a very brisk and thorough action from the granules. As the evacuation had been so thorough, no laxative was given the next two days. Then a dose of No. 3, and, two days later, a dose of No. 4. After about three weeks of using one of the four laxatives every other day, we gave them only every third day, and sometimes the patient could go for even five or six days, having a natural action every day. Whenever he failed to have an action by 10 o'clock in the forenoon, he took a dose.

In three months, this man practically was cured; that is, to say, he took a laxative only at intervals of ten or fifteen days. His rectum had recovered its normal sensibility and tonicity, while the sphincter admitted a 1-inch dilator with ease. Of the four prescriptions, it was found that phenolphthalein and Waugh's granules gave the best results. The last time I saw him, he said to me: "No one that has not been through it can appreciate what a nightmare I have been freed from in getting cured of my constipation. I have taken a new hold upon life."

2920 Warren Ave.

[*To be continued.*]

The Treatment of Chronic Diseases

Diseases of the Nervous System

By GEORGE F. BUTLER, M. D., Wilmette, Illinois
Medical Director, The North Shore Health Resort, Winnetka, Illinois.

(*Continued from January issue, page 42*)

Principles and Advice in Treating Neurasthenia

The *General Principles* of treatment consist in educating the patient to live within his nerve-energy income—which is exceedingly small. The man of average strength can not, with impunity, attempt to perform the muscular feats of an athlete or prize-fighter. Likewise, the neurasthenic can not do what many of his acquaintances do. He must forego a great many pleasures; must abstain from many pastimes and entertainments; refrain from many articles of food that to him seem simple, natural, and wholesome, but, nevertheless, stand in the way of his recovery. He must, above all, learn his limits.

His treatment must be a sort of education, teaching him to be patient and temperate in all things. He must learn to adapt himself to his surroundings, to reestablish the lost normal equilibrium between himself, as an individual, and his environment. To mitigate, if not, to prevent a collapse, which constitutes such a discouraging feature in the course and progress of neurasthenia, discouraging alike to patient and the family. To achieve this, the patient must be taught to avoid extremes, especially of emotion, and also of work, mental or physical; in fact, bodily and mental hygiene adapted to his individuality must be instituted. No rest-cure, no seaside, no gymnastics, no cold or warm water, in fact, no one particular method is equally applicable to all the victims. And drugs alone will not bring about restoration to health.

Some Specific Advice.—There are certain remedies, however, that will be found of great value in many cases of neurasthenia.

Knowing, as we do, that there always is present autotoxemia in these cases, it follows that free elimination, through all emunctories, especially the bowels and kidneys, is necessary. Hydrotherapy and balneotherapy, as already indicated, favor elimination through the skin and kidneys. However, the bowels should be kept active, and that by remedies that do not, by their secondary action, tend to constipate or to disturb the stomach. I have found some simple laxative saline, such as sodium phosphate, rochelle salt or, what has proved of special value in many patients of mine, an effervescent saline laxative, as a rule to act best in connection with intestinal antiseptics. As a general tonic in convalescence, arsenic; while, if the condition is one of sexual neurasthenia, the three arsenates of strychnine, quinine, and iron, with nuclein will prove of great value.

However, during the entire course of the treatment, the patient should be under the control of a physician and during treatment should be severed from the environment in which the disorder has grown up. He should receive dietary, hydrotherapeutic, balneotherapeutic, and drug treatment only as indicated in his particular case. The great results formerly attained at watering-places were due to the partial application of these principles and to the medical control exercised.

No rest-cure is properly carried out where the principles indicated are neglected. Rest-cure places under lay control, whether of trained nurses or otherwise, are simply quackish lounging-places. That the training of a widely advertised system of rest-cure is eminently deficient, is shown by the fact that nurses trained under that system never detected the untoward action of drugs used in treatment until decades ofter their existence had been pointed out by neurologists.

A Summary

In summarizing the ideas expressed above, remember that the neurasthenic is born, not made. He is, from his mother's womb, a physical and mental "unfit," a shiftless potterer in nerves, just as some men are in business. The stresses and strains of modern life do not make neurasthenics; they show them up. Neither do I take any stock in the doctrine that neuras-

thenia is the result of autotoxemia, except in the sense of part of a vicious circle. Autotoxemia from retained waste products is, primarily, a result, and not a cause, of neurasthenia, owing to faulty innervation of metabolism and elimination. So with indigestion, insomnia, and all the other train of symptoms. In short, neurasthenia is not a condition of the nerves at all, but, of the whole body-economy. Given a certain stewardship, represented by the whole body-mechanism, and the neurasthenic is inherently incapable of running it at a profit, just as a business ne'er-do-well, given a certain capital of money and opportunity, muddles and fritters it away.

This being so, the two prevailing principles of treatment are both equally irrational and fallacious, namely, that of direct nerve sedation and that of direct nerve stimulation, represented, respectively, by the use of bromides and strychnine. If the nerve-tissue and its functional capacity are below par, then it can not be rational therapy to depress and stultify them still further with a combination of two such depressant and toxic drugs as potassium and bromine. If, on the other hand, the irritation-symptoms of neurasthenia be the expression of a deficient nerve-system working against odds, then to whip it into still further frantic effort with strychnine is the worst kind of therapeutic folly.

The truth is, the neurasthenic requires neither sedation nor stimulation, at least not of a direct or forcible nature. The business ne'er-do-well is not helped either by petting or by putting money and opportunity into his hand. What he needs is, a guardian, a manager, to manage his affairs so that he may be kept reasonably free from debt and muddle. So the nervous ne'er-do-well needs, not sedatives or stimulants, but, a careful regulation of all his body-economies in such a fashion that his modest nervous income will be expended to the best possible advantage and with a minimum of friction.

How shall this be done? There is no cut and dried method, no hard and fast rule. Each case is a law unto itself. And it is characteristic of these patients, as it is of all types of shiftless persons, that they do not exhibit their shiftlessness in the same direction two days consecutively. For several days at a time, they often display a temporary efficiency in utilizing and managing one or two departments of their economy and do finely in this direction, then, like the business-incompetent, they give up the effort, only to renew it in the same fitful way in other directions.

Hence, the intelligent therapy of this condition demands periodic supervision, changing treatment from time to time as the shifting phases of the patient may require, and always on the principles that apply to the helping of ne'er-do-wells. One of these principles is, not to help them more than is absolutely necessary, but, rather, to let them help themselves as much as possible. Another is, that, when help is needed, it should be given in small, frequently repeated, judiciously placed doses rather than in large quantities. To the capable, energetic business man, temporarily pressed, it is all right to give large sums of money or other heroic form of aid. But, for the constant potterer, such a course manifestly is worse than to let him alone.

The Rational Therapy of Neurasthenia

Translated into actual therapeutic terms, then, the rational treatment of the neurasthenic is, briefly, to regulate, by whatever means seem most appropriate (preferably not drugs), whatever phase of his or her disordered and mismanaged body-economy needs help at a given moment. It may, possibly, happen that, in carrying out this plan of treatment, the slight and temporary use of such drugs as strychnine and bromides may occasionally be called for; but, their routine or cumulative administration never is required in neurasthenia.

The remedies which here are most frequently indicated are, the laxative salines and the gastrointestinal cleansers, such as sulphur and phenolphthalein; the metabolic alteratives and eliminants, such as arsenic and colchicum; and the tissue nutrients, such as nuclein and lecithin.

The mental element is the one that looms largest in the condition of the neurasthenic, so that the moral treatment is correspondingly important. In mild cases, he needs nothing more than the enjoyment of good hygienic habits and the assurance that nothing serious ails him; and he may be allowed to follow—indeed, he had better do so—his customary employment. If he has no employment, the sooner he finds one the better. In severer cases, where the mental perturbation and depression is a very serious matter, it is better that he

should drop his accustomed work for a time and go away from home, among congenial people who are comparative strangers, where he can not air or nurse his obsessions. It is, however, a mistake, I think, to send these patients away into surroundings that are so completely the opposite of those to which they have been used as to pall upon them, as, for example, to send a city man into extremely rural environment; for, however wholesome this course may be for the body, it is liable to have upon the mind just the reverse effect from that which we are seeking, and make him brooding and mopy.

What the average neurasthenic patient needs most is, play—but, it must be play of a kind that is congenial and engrossing to him. For this reason, clergymen and schoolteachers, who suffer most from neurasthenia, are the hardest patients to cure, because they are estopped by their religious and social prejudices and principles from indulging in just the form of fun that would relieve them and for which their human minds really crave. I have seen many a neurasthenic minister and teacher whom a good game of cards or a seat at the comedy two or three nights a week for a few months would have cured, but, who could not be persuaded to follow this advice.

Neurasthenics always drink too little water, and usually have to be forced to take a sufficient quantity of it. Generally, they can best be induced to do so by prescribing some brand of mineral water to be taken so many times a day. The psychic influence of this order will, as a rule, produce the desired result.

The insomnia of neurasthenia should not be met by giving narcotics; for, these patients furnish the readiest subjects of habit-formation. As a rule, they can induce sleep by the simple expedient of taking a little hot milk or rum punch before retiring; then, when once the spell is well broken, they will go to sleep without any such aid.

Hydrotherapy is an excellent agent in the treatment of neurasthenics and should never be neglected. There is hardly a phase of hydrotherapy that is not applicable and useful, from the hot-pack to the shower-bath. Nor should it be limited to the sporadic dallying methods of "home treatment", but, carried out in a systematic, orderly fashion. It is my practice to insist that these patients submit themselves to the régime of some good sanitarium or, if that be not available, of some reputable bath-establishment where adequate equipment and skilled attendants render the procedure scientific and efficacious. It is not necessary that they go into residence at such an institution; but, they should go regularly and receive treatment, either under the supervision of the medical director, if it be a sanitarium, or, if it be a bath-house, under the direction of the physician in care of the case. Hot baths and packs, mud-baths, to promote elimination; with rubs to stimulate the activity of the skin and general circulation; shower-baths and needle-baths as a still more lively tonic; these and other procedures are all of the highest value in the treatment of this condition.

Closely associated with hydrotherapy is electrotherapy, which should be administered in connection with the former. Of electrical measures, galvanization of the muscles, faradization of the skin, and high-frequency condensation are the most useful. Most of these treatments are best carried out at night, after which the patient may be allowed to walk home briskly, when, as a rule, he will put in a night of quiet, restful, healthful sleep.

[*To be continued.*]

Life and Psychophysiology

By E. S. HASWELL, M. D., Albany, New York

THE problem of what is life is one over which opposing schools of philosophers have fought for ages. Only an ignoramus would say that he had solved it, while the philosopher does not believe that its solution lies wholly within the realm of the possibilities of metaphysics. A discussion of this question presupposes a knowledge of physical and of biological facts; also an acquaintance with, if not a belief in, Darwin's theory of the origin of the species—which theory has been proven to the satisfaction of biologists.

Not entering too deeply into the subject of matter, it may be stated that matter is that which is—*not* that which was nor that that will be, but, that which exists. Life is an attribute of every and all forms of matter.

Life is the phenomenon or the manifestation of the autoconvertibility of latent, or potential energy, into kinetic energy both in animate and inanimate matter.

As the atom is the unit of chemical affinity and the molecule is the unit of that physical attraction of masses which in cosmic bodies becomes gravitation, so is the cell the unit of animate masses or entities, the life of which is the sum total of the life of its individual constituent cells.

This cell primarily depends upon chemical affinity, which unites atoms into molecules, and, secondly, upon cohesion and adhesion, which actions combine molecules into masses. Smaller masses unite with larger ones, *ad infinitum;* thus ultimately producing the various cosmic units in which attraction becomes the force of gravity. The gravity of each, exerted upon all others, maintains all bodies in their relative positions in the universe; thus demonstrating a state of mutual dependence, in which the power of each is used for the welfare of the whole, or, a cosmic democracy.

The Evolution of the Animal-World

The elements essential for cellular life are oxygen, sulphur, nitrogen, chlorine, phosphorus, carbon, hydrogen, iron, magnesium, calcium, sodium, and potassium, the atoms of which combine to form highly complex molecules of a gelatinous or colloidal substance, called protoplasm, and constituting an electrolytic compound. These elements are named in order as they occur in the electrochemical series: that is to say, each is electropositive to those preceding and electronegative to those succeeding it. Cells are miniature electric batteries, which, under proper conditions, discharge their energy. When stimulated, cells convert their potential into kinetic energy. Muscular contractions, heart beats, and the like, are attended by a discharge of electrical energy —a fact which, although their discharge is immeasurably small, nevertheless, has been demonstrated.

The cells are the units of animal-matter. Their location and function determine their arrangement, morphology, and physiology. Each organ is composed of a collection or group of cells harmoniously performing the same work in what may be termed a cellular community or democracy: each cell serving the interest of its fellows and all organs working for the benefit of the entire body, or the great cellular commonwealth.

Those collections of molecules composing small masses of matter, the sum total of which constitute our soil, are divided into inorganic and organic chemical compounds. From this soil, the plants derive their nutrition. By the processes of absorption, assimilation, and synthetic chemistry, the plant constructs a highly organized animate entity, which is composed of the same elements as the soil on which it grows. Its proteids, carbohydrates, fats, and mineral constituents are merely the products of the progressively constructive metamorphosis that takes place in the rearrangement of atoms and molecules in their transformation from soil matter and energy into plant-cell protoplasm.

Vegetable life is the interlink or transitional stage between the soil and the highly complex and organized entities of animal matter. The animal-kingdom depends for its life directly or indirectly upon the vegetable kingdom. Herbivorous animals depend directly upon the plant for nutrition, while the car-

nivorous animals feed upon the herbivorous ones. The animal-economy is dependent for its sustenance and energy upon the ingestion and absorption of vegetables or their products. So, vegetable matter is transformed, by the animal digestive apparatus and synthetic chemistry, into cells, tissues, and energy of animal-life. In this state, matter has reached its highest degree of perfection and efficiency.

Daily the animal organism, by reason of its processes of waste and repair, excretes the end-products of the disintegration, as caused by kinetic energy upon tissue-substances and cellular compounds. These excretory substances undergo a further breaking up, ultimately resuming their original inorganic, or inanimate, state, or condition.

When, by reason of impaired nutritive processes or altered chemical forms, the animal-economy reaches that stage in which it no longer is able to convert its potential energy into kinetic energy, the body, as a whole, becomes an inert mass of matter, or, now is in that condition commonly termed dead, following which it decays and disintegrates into its original and less complex chemical compounds—a literal return to dust, when it again nourishes the plants and then, through them. the animals. And this cycle is endlessly repeated, for as long as environmental condition remains favorable.

Life a Democratic Process

Thus we see that life is a democratic process; that all forms of matter are composed of a greater or less number of elements or combinations of elements. All possess the universal properties of matter. which are: compressibility, divisibility. elasticity expansibility, extension, indestructibility, inertia, impenetrability, mobility, porosity, weight, together with the characteristic properties of the special forms of matter, which vary according to their state of being and function. All forms possess affinity, attraction, and energy. All matter, therefore, possesses life. in a broad sense, while, in a narrow sense. the term "life" is limited to the vegetable and animal states—these designating mass-entities that manifest specialized forms of energy. It is not too much to affirm that socalled inanimate matter is inanimate only from an arbitrary point of view. The soil can not impart vital principles to a plant, if it does not already possess them. itself.

The proof, that animate principles are present in socalled inanimate compounds. is readily found in the reaction taking place between solutions of sodium chloride and silver nitrate when brought into contact. There is, at once, disintegration of each into its component atoms and, by reason of their intense chemical affinity, two different chemical compounds are formed immediately—one, sodium nitrate, and the other, silver chloride. The newly formed compound, silver chloride, is produced by reason of the great affinity of silver for chlorine, while, simultaneously, the reaction is accompanied by the manifestation of energy. This new compound possesses its own physical and chemical characteristics. There has been neither destruction nor production of matter; the sum total of the contents of the test tube, of the chemical elements remaining the same as before.

Is not this the manifestation of the two fundamental principles of life—energy and the affinity of opposites uniting to produce but, not, to create? In this experiment, the reaction is not unlike that of the positive and negative factors of human life. where, when the affinity between mates is not sufficiently strong, they divorce themselves and seek new combinations of mates between whom there is a greater affinity.

Life depends upon chemical activity and affinity and is that form of energy manifested by the process termed biological chemistry. It is a product of the democratic law of matter, that all things operate for the common welfare.

Physiological Psychology and the Physician

The highest form of the manifestation of life is that physiological process known as human thought, with its resultant actions. Thought is the phenomenon of the physiological activity of the nerve-cells of the intellectual centers of the brain. Thought is that form of human energy that institutes, controls, and directs man's various activities.

For a proper understanding of human nature; that is, of man's ideas, thoughts, emotions, passions, vices, virtues, and desires, and the various mental qualities by which the individul is characterized, a knowledge of the principles of evolution and anthropology would be of considerable value to the physician; but, a thorough comprehension of normal psychology is

very important and essential and should be incorporated in that part of the medical curriculum dealing with the psychoses.

As students of human anatomy and physiology, physicians are well aware of the commanding influence that is possessed and maintained by the physiological activity of the brain in ruling and governing the human body. Our present knowledge of the anatomy, physiology, and diseases of the brain and nervous system has explained so much of human activity that heretofore was believed to be beyond the knowledge of man that we should not hesitate to plunge boldly and delve deeply into that most-important, yet, least understood, of all branches of physiology, namely, that of psychophysiology.

More and more, as each year passes, the importance of the psychic element has come to be realized in the treatment and not infrequently in the diagnosis of many diseases, especially those of neuropathic and psychopathic origin. This brings us to a brief consideration of that mental process termed consciousness.

Soul, Mind, Consciousness, Thought

Normal consciousness is that physiologic function of the brain whereby, through the senses, it has perception of external matter and its universal and characteristic properties and whereby, further, it reacts to these sensorial impressions and resulting motorial expressions, besides being cognizant of the existence of that body in which it is located.

The mind, of which consciousness and thought are manifestations, has long been considered the interlink which binds an immaterial soul to a material body. The *brain* is the *organ of consciousness*, of thought, and of reason, not the seat of their phenomena.

Complete consciousness depends upon the sum total of the various sensory impressions and their numerous associated memories, which are collected by the association-tracts or fibers. The impairment of receptivity to impressions, of sensory and memory-centers, lowers by just so much the degree of consciousness.

Cerebral localization teaches that there are definite memory-centers for olfactory, auditory, visual, and various other sensory impressions and of motorial expressions. Discussion is unnecessary, except that it may be stated that disease—destructive inflammatory processes, neoplasms, et cetera, —of any one of these areas impairs or destroys the particular function of the area involved. A lesion of the superior left temporal convolution causes word-deafness, and the patient, because of inability to receive word-impressions, becomes nonperceptive to the sound-waves of spoken language. Lesions of the occipital lobe cause partial or total blindnes, thereby impairing or destroying as much of the patients consciousness as depends upon visual sensory impressions.

The condition of "mind-blindness," in which the patient sees all objects, but, is unable to recall or register the visual image, is a striking example of impairment of consciousness.

Thus a *material basis for consciousness* is established. The effect of certain drugs in altering consciousness, producing hallucinations or causing unconsciousness by direct or indirect action upon brain-cells is a well-known fact.

Thought a Form of Energy

Thought, being a phenomenon of cerebral activity, is, therefore, a form of energy. *No form of voluntary motor expression occurs in which the muscle-cells do not receive a stimulus from an impulse sent out by the motor-area of the brain.*

The potential energy of the cell, through its neurons and motorial end-plates, is converted into the kinetic energy of muscular action. But, it will be contended that there is not enough potential energy in the cells of the motor-area to lift a heavy weight. True! However, it also is true that the potential energy of a dry-cell battery will not move a mountain; still, the spark from it, properly applied to a high explosive, will move several tons of stone or drive an internal-combustion engine.

As these material changes impair consciousness and the particular function of the area affected by them, by just so much are the reasoning faculties of the patient reduced. Therefore, if it is essential that a thorough and adequate knowledge of cerebral localization is necessary for a proper understanding of these material changes that affect the brain, how much more essential, then, must be a knowledge of the physiology of thought and reason—that is to say, of psychophysiology in its more limited sense—to a proper understanding of the condition of the patient's mind in disease, whether or not that dis-

ease be a primary phychosis or secondary to a physical condition.

Many men, through their lack of knowledge of psychology, attribute much of their patient's mental condition to whimsicalness, perverted and distorted imagination, and even to downright crankiness, when, if they could analyze their patients' psychic condition, they would discover some mental flaw, error of reasoning or defect of consciousness; that is to say, a reaction to external stimuli, which, when corrected, would greatly alleviate and, many times cure the mental condition.

Wherein Doctors Failed

Medical dogmatism has been almost, if not quite, as fatal at times to the advancement of the profession as religious dogmatism has been to the advancement of general science. If the profession had learned earlier to recognize that class of patients needing mental suggestion and had intelligently applied psychotherapy, there would have been no excuse for the organization and perpetuation of the Christian-Science cult. Had the profession given earlier attention to the study of scientific massage, there would have been no occasion for the school of Osteopathy. There were and are those patients who need psychotherapy, and those who need scientifically applied massage. If the profession had recognized those groups of cases that could be cured only by means of these methods of procedure and had intelligently applied the indicated form of treatment, then the supply of that type of treatment would not have originated from external sources.

So, it behooves the profession not to look with too much incredulity and bigotry upon the well-meaning efforts of those who are introducing psychoanalysis and psychotherapy as methods of medical procedure. Too long, indeed, has psychophysiology been considered the special property of the socalled psychologist. Too long, indeed, has it been subjected to the malignant influence of a spiritualistic mysticism and a religious fanaticism that have built around it so many hypotheses, and which it is deemed sacrilegious to question and heresy to deny.

The condition of psychology at the present time is a paradox, for, it is at once pathetic and ludicrous. Psychopathology is granted to the domain of medicine and to the province of the psychiatrist, but, psychophysiology, or the study of the higher normal psychic activity, is, apparently, not considered as a department of human physiology.

It is true that the greatest advances in physiology are made by comparing the normal with those changes of functions and activities that are manifested in the abnormal state.

If psychophysiology is to be considered as the study of an immaterial self, then, why should psychopathology be considered the proper subject for medical investigation? Either psychophysiology should receive careful study by the medical student prior to his course in insanity, and it should be treated as a branch of physiology proper, or, the medical profession should renounce all right to treat the psychoses and consider them merely the diseased condition of an immortal and immaterial soul and give them over to the theologian for diagnosis and treatment. In other words:

When the body functionates normally (health), then it is the "soul," while, when it functionates abnormally, (disease) then it is the "brain" that is the putative basic factor.

What Others are Doing

NEW TREATMENT FOR VINCENT'S ANGINA

One of the most troublesome forms of sore throat is the ulceromembranous type, characterized by a grayish, putrid false membrane and more or less deep ulceration, and which goes under the name of Vincent's angina. In this form of sore throat, extremely fetid breath, increased salivation, painful deglutition, and glandular swelling are present; also much pain upon pressure, elevation of temperature, and a general infectious appearance.

Lagarde in *Paris Médical* for October 12, 1918 (p. 289), says that various antiseptics were tried by him in a series of cases of this form of sore-throat, but, generally, with poor results. Among them, were: methylene-blue, Labarraque's solution, and arsenobenzol in powder. As a rule, improvement was very slow, until he began the use of Dakin's solution, which was applied by means of frequent irrigations and as a gargle. The results obtained with this antiseptic were very striking. He was surprised to observe, even after the first lavage or gargling, the almost instantaneous disappearance of the general phenomena, the arrest of the necrotic process, and extremely rapid cicatrization of the lesions.

One case is described in detail, as typical of the others, this patient being a soldier, 26 years old, in whom, despite the use of methylene-blue and other classical applications, the condition not only persisted, but, became more severe. He then began to irrigate with Dakin's solution twice a day, using a liter at a time. In the intervals, the patient gargled his throat with the same solution. From the very first lavage, improvement took place. The ulcerations began to heal up, the necrotic material disappeared, and the natural rose-color of the tissues again made its appearance.

The author concludes that, on account of its detersive action, its powerful bactericidal action, and its effect upon phagocytosis, Dakin's solution is superior to other remedies in the treatment of Vincent's angina. Six subjects were treated with this remedy, with most satisfactory results.

AN "ABORTIVE" TREATMENT FOR INFLUENZA

Many "specifics" have been suggested for the treatment of influenza and its complications. Thus W. F. Burrows and E. C. Burrows, writing in *The Medical Record* for December 21, 1918 (p. 1081), strongly recommend the intravenous administration of quinine dihydrochloride. The indications for its use, as given, are as follows:

1. When the disease shows no retrogression after three or five days; (2) when the temperature climbs and remains more constantly high; (3) when the pulse, previously slow, exceeds 100; (4) when the cough increases; (5) when rusty sputum or physical signs of definite pneumonic consolidation occur.

It is stated that quinine dihydrochloride is used by the authors in a 3- to 10-percent solution, except for the young, in whose case, it may be given intramuscularly, in doses of 1 1-2 grains for each year of age. Intravenously, from 7 to 20 grains of the alkaloid is injected at a dose. In one instance, as much as 22 1-2 grains was given at one injection, the patient having a temperature of 104° F., a pulse of from 90 to 105, respiration numbering 26, associated with the characteristic symptoms of influenza.

The intravenous injection was followed by a temperature drop, in two hours, to 101.5 degrees, resembling that occurring in the crisis of lobar pneumonia. It continued to fall and did not rise again above 100.5 degrees. The other symptoms disappeared within a few days. The solution of quinine dihydrochloride should be injected warm and slowly, so as to consume a period of from ten to twenty minutes.

The sensations produced, according to the authors, are those of relief from pain, a sense of tingling and warmth, at first slight dilatation of the pupils, some dizzi-

ness, interference with hearing, and, occasionally, slight mental aberration. Once in a while, vomiting has occurred while the injection was being made.

ACTION OF CHLORINATED ANTISEPTICS UPON BLOOD CLOTS

In an interesting study of the action of the chlorinated antiseptics upon blood clots, as conducted by Herbert D. Taylor and Marianne G. Stebbins, in the laboratories of the Rockefeller Institute for Medical Research, and published in *The Journal of Experimental Medicine* for January 1, it was found that not one of the antiseptic chlorine compounds, including Dakin's hypochlorite solution, chlorazene, and dichloramine-T, possesses the power of penetrating blood clots and destroying bacteria contained therein. From these observations, it seems probable that the fibrin of the blood clot is resistant to these substances, since the plasma and the red and white cells are easily dissolved by them.

The lesson to be learned from these observations is, that virulent bacteria may be protected by blood clots in wounds or elsewhere, and that, if it is desired to render such a wound free from infective organisms, it is incumbent to remove all clots mechanically.

CAUSES OF DEATH FROM SALVARSAN

In an interesting paper relative to the causes of early death from arsphenamine (salvarsan), D. E. Jackson and M. I. Smith, of the Division of Pharmacology, United States Public Health Service, state (*Jour. Pharmacol. and Exp. Ther.*, Nov., 1918) that, when the substance is injected slowly in very dilute alkaline solution, no striking results are obtained in an anesthetized dog. The most striking early symptoms of toxicity are, dilatation of the heart, in association with progressively increasing pulmonary blood pressure, and a slow, gradual, but, not severe fall of the systemic pressure.

The cause of these changes is ascribed, partly to the alkalinity of the solution of arsphenamine used, and, in part to the specific action of the drug. The remedy which they have found likely to be of greatest value for the relief of toxic symptoms is tyramine. Epinephrin is believed to be contraindicated.

EMETINE IN INFLUENZA

According to P. Lerebouillet, who writes on the treatment of pneumonias complicating grip in *Paris Médical* for November 16, 1918, expectoration in these cases sometimes is facilitated by the employment of injections of emetine. While the indications for this remedy are somewhat difficult to fix and its effects may be slight or even harmful in diffuse forms of the disease, the author has found it of distinct benefit in certain clearly localized types of the disease, and he has employed it with marked success in minute doses in certain tuberculous patients who have been attacked with grip, with resistant fever and presenting well localized lesions. It is peculiarly indicated when there is a marked tendency to hemoptysis.

HYOSCINE-MORPHINE ANESTHESIA IN GOITER OPERATIONS

Every surgeon realizes the danger of operations for Graves's disease, especially from the use of the general anesthetics. In a paper published in *The Lancet* for December 7, 1918, S. H. Rouquette advocates the conjoint use of hyoscine-morphine with novocaine, employed as a local anesthetic.

Thus, for the induction of amnesia, Rouquette ordinarily injects 1-100 grain of hyoscine with 1-6 grain of morphine one hour before the operation, following with a 1-4-grain dose of morphine half an hour later. For local anesthesia, he uses novocaine in a solution containing potassium sulphate, sodium chloride, and suprarenin hydrochloride. During the operation, the room must be kept as quiet as possible, no talking to be allowed. For a possible emergency, such as an attack of dyspnea, cyanosis or restlessness, he keeps in readiness a freshly prepared solution of strophanthin and adrenalin, the effect of which, when administered subcutaneously, is instantaneous. The inhalation of oxygen sometimes is useful when dealing with an attack of cyanosis.

Doctor Rouquette asserts that this combination of hyoscine-morphine amnesia and local infiltration is an absolutely safe method of producing anesthesia, one that

possesses no disadvantages nor any contraindications.

Among American surgeons, objection may be made to following the hyoscine-morphine with a subsequent dose of morphine, because of the respiratory depressant action of this drug.

TRANSMISSION BY COWS' MILK OF B. DIPHTHERIAE

Writing in *The Veterinary Journal* for December last, Mr. G. Gair, an English veterinarian, relates that early last June a serious outbreak of diphtheria occurred in a certain district in his country. He was instructed by the medical officer of health to make a thorough investigation with the object of ascertaining the source of the outbreak; the investigation was to include the bacteriological examination of the milk and water supply of the various dairies from which the milk supply of the affected area was derived.

For the purpose of ascertaining whether the milk supply was implicated, careful examination was made of the udders and teats of the cows, but, no sign of abrasion or old scars was found on them. Samples of milk were taken from each of the dairies, plated on blood serum and blood agar, incubated for eighteen hours at 37° C., with the result that characteristic colonies were observed on the tubes plated with milk of a certain dairy; colonies appeared almost the size of pin-heads, convex surface, whitish yellow in color, circular, moist, and opaque in appearance, remained discrete, did not tend to run together. Although Loeffler's coagulated blood serum is the best medium to use for diagnostic purposes, Mr. Gair found the growths on the blood agar tubes very luxuriant. On ordinary agar, as a rule, growths are slow and colonies small, even twenty-four hours' incubation. The growth, however, was much richer on glycerine agar—5 to 7 percent, and showed all the characteristic granular appearance and irregular borders. On glycerine agar tubes, smeared with human blood, the red color is changed by the diphtheria bacilli, while Hofmann's bacilli do not alter the red color; in fact, the members of the diphtheroid group do not possess this hemolytic power.

Swabs from the throats of the dairy workers were obtained and similarly incubated as above, but in no case was it possible to find a diphtheria bacillus.

The various waters on farms to which the cows had access were examined bacteriologically but with negative results.

It was ascertained that just before and during the outbreak of diphtheria the weather was sultry and dry and that some of the cowsheds were invaded by myriads of flies that settled on the bodies, udders and teats of the cows greatly annoying them. These flies also were found in pools of sewage that had collected, owing to the overflow of a sewage tank nearby and there they deposited their eggs.

It is, therefore, undoubtedly this circumstance that constituted the source of contamination of the milk supply for the district in which diphtheria occurred. Milk secured in other cowsheds in the neighborhood, but in which no flies found access, was used in a circumscribed territory and here no case of diphtheria occurred amongst those using this milk. Every case of infection could be traced directly to milk being derived from the particular sheds that were infested with the flies.

Mr. Gair concludes that an epidemic of diphtheria or, for the matter of that, of typhoid fever, when due to the milk supply will exhibit the following features:

1. Outbreak sudden.
2. Many attacks occur together.
3. The larger proportions of householders will have a common milk supply.
4. Incidence of disease falling on the principal consumers.

A VON-PIRQUET SURVEY

In the interesting and instructive Framingham Demonstration, to which we have alluded repeatedly, a von-Pirquet survey was undertaken some time ago, the results of which are reported in "Monograph No. 5" and reproduced in the *Bulletin of the National Tuberculosis Association* for January. The study was inaugurated:

1. To determine at the beginning of the Demonstration the percentage of positive reactions in a definite age group, as an index of infection for comparison with possible subsequent findings.

2. To determine the comparative reaction percentages for different nationalities, neighborhoods, and so on.

3. To indicate, if possible, certain sources of childhood infection, and certain

factors that may be of importance in determining childhood resistance.

4. To select those children most needing care, for future special treatment in the schools, at the Health Camp, and elsewhere.

5. To indicate the reliability of the tuberculin test in the younger age groups as an index of genuine tuberculous diseases.

Altogether 460 tests were made in children, between the ages of one and seven years, in all parts of the community (except the rural district) and representative of a variety of economic, social, and racial factors.

The female children showed a distinctly higher rate in the 6 or 7-year group than the males, the ratio being 55 percent to 38 percent for positive reactions. For both sexes combined, the percentage of positive reactions was 33.

The percentage of positive reactions increases consistently with age, ranging from 15 percent for 1 to 2 years up to 54 percent for 6 to 7 years, both sexes included.

Variations in the percentage of positive reactions in different sections of the community seem to fall along racial rather than along economic or sanitary lines. The Coburnville section of the community, inhabited largely by Italians, with hygienic conditions poor and very similar to hygienic conditions in the village of Saxonville, had a percentage of positive reactions of 46, whereas Saxonville, inhabited largely by people of Irish-American, French-Canadian, and Jewish extraction had a percentage of positive reactions of 23.

Classified by races, the percentage of positive reactions for Italians was 51, for American 18, and for the Irish race stock 30. On the other hand, the number of adult cases found thus far is relatively low in the Italian group and, as is well known, the tuberculosis mortality rates for Italians are in general below average in American communities. This holds true for Framingham.

In contrast, the Irish group in the tuberculin study show a comparatively low percentage of reactions, in spite of the fact that tuberculosis rates in Irish stock generally, in Framingham and elsewhere, are uniformly high.

Does this mean that the tuberculin reaction measures the resistance of the child to infection, in which case, with a greater exposure and a more widespread infection among Irish children one might expect to find a milder or less frequent von Pirquet reaction than would be the case in a more resistant stock?

In the physical examination of the positive cases, no active cases of tuberculosis were discovered, even under five years of age. These children, however, will so far as possible be followed through the period of the Demonstration.

NURSES' TRAINING SCHOOL AT A MISSOURI STATE HOSPITAL

A training school for nurses is a new feature of State Hospital No. 4. Young women, displaying rare intelligence in caring for and handling patients, are in demand; and to secure and retain such type, the institution must maintain within its own walls a training school for nurses. This school will be a torch bearer in the study of those nervously and mentally ill. It will instruct attendants to encourage the timid, comfort the depressed, and contribute to the cheerfulness and contentment of all. It will also give a chance for good and useful occupation for worthy and purposeful young women who have been denied the higher educational advantages and those who must be entirely self-supporting during the period of training.

The lectures of the medical staff to the class of 62 will be the most potent single factor in encouraging and helping young ladies in this, the greatest work for human uplift. We heartily commend the progressive spirit of Dr. J. L. Eaton, Superintendent, in establishing this school, the result of which will be trained and efficient attendants, drilled in specific duty toward patients.—From *The Farmington, Mo., News.*

INFLUENZA IN SWITZERLAND

The Practitioner, for December last, abstracts, from *Correspondenzblatt für Schweizer Aerzte,* an article by Professor Paul Demiéville, of Lausanne, according to which there has been an increase in the virulence of influenza since the outbreak of the epidemic in May, 1918, and to a large extent this has been due to the development of the disease in thickly populated areas. With this increase in virulence, influenza has very rapid and intense toxic qualities, from which arises vasomotor paralysis, resulting so frequently in serious

complications of the lung, congestion and bronchopneumonia. The professor believes that hypostasis has a considerable share in bringing about these ill-effects, and that these pulmonary complications, especially in the early stage, are localized at the base in consequence. A premature return to work or even getting up too quickly after the first fall of the temperature has, together with too sudden a resumption of big meals, been the most frequent cause of relapses. It is a point of capital importance, which can not be insisted upon too strongly, to arrange for the complete restoration of the patient's strength by avoiding even the slightest cause of exhaustion. The large doses of alcohol, so popular in lay treatment of the disease, have a most deplorable effect, and, moreover, often increase the severe headache.

THE TREATMENT OF INFLUENZA

In the treatment of influenza, Professor Paul Demiéville, of Lausanne, whose article was referred to in the preceding, insists upon the greatest possible care in the management of the patients. Above all, these should never be made to sit up in bed for any purpose except of extreme urgency, and then only with assistance and support. Purging is inadvisable, a simple laxative being all that is necessary. Everything liable to set up excessive sweating should be avoided, except during the first day or two. However, free diuresis should be promoted by encouraging the copious ingestion of water, lemonade and the like, in order to relieve the system as rapidly as possible of the intoxication, thus allaying headache and fever. In case of intense headache, an ice-bag or cold compress renewed every minute for half an hour is advisable. In ordinary cases, the fever will last two or three days and then disappear spontaneously; no further antipyretic treatment being called for. If patients insist on prescriptions, Professor Demiéville orders an acid mixture of hydrochloric acid in dilution of one to two hundred. He condemns the use of all antipyretic drugs since they are all depressants, more or less paralyzing the motor nerves, enfeebling the heart, and often upsetting the stomach. All of them, moreover, reduce the hemoglobin and lower the organic defenses at a time when it is particularly urgent to support them as much as possible.

If the temperature has not fallen after the first day or two, active measures should promptly be instituted against pneumonia and the heart failure which so often accompanies it. Counterirritants, cupping, pneumonia-jackets, and other measures should be applied, the heart and circulation being watched anxiously. Benefit will accrue by giving caffeine, digitalis, or large doses of camphor, 1 to 2 mils of a 20-percent oily solution with 15 percent of ether added. The patient should be kept in bed in a sitting position, and, even in the gravest cases, should be lifted into an armchair and remain there for four or six hours a day. The Fowler position is as useful to physicians as to surgeons, and placing the patient in an armchair is of very great value when the heart is irregular and depressed.

Fluid nourishment should be given until the temperature has been normal for two days, and the return to solid food must be made gradually and cautiously. The patient should not be allowed to get up from bed until a day at least after he has been given solid food. Getting up too soon is the most fertile source of relapses.

ADRENALIN AND PITUITARY SOLUTION FOR ASTHMA

Bensaude and Hallion report the results obtained in the treatment of asthma by a mixture of adrenalin and hypophysial extract. Each mil of the solution contained half a milligram of adrenalin hydrochloride and an amount of hypophysial extract, freed from albumen, corresponding to 0.25 Gm. of the fresh gland. It is put up in ampules, sterilized and ready for hypodermic injection.

The dose usually given was 1 mil each day for adults; for children, the dose was decreased as nearly as possible in proportion to weight. The mixture was given in cases of socalled essential asthma, and in a few cases of persistent spasmodic cough. Nearly all the patients treated, ranging in age from eight to over sixty years, experienced speedy relief of the asthmatic attack. The effect began to be felt in from two to five minutes after the injection, and one was enough, as a rule, to cut short the fit. It brought about so much relief

that, in night attacks, the most usual form, the patient was able to settle down and enjoy a good rest for the remainder of the night. Not only is the immediate fit relieved, but it appears to have an influence in postponing later attacks. Patients who have been accustomed to rely upon morphine for relief have expressed their preference for this mixture. A further advantage is, that the effect does not get less on repetition and a habit is not engendered. (*Presse méd.* through *Pract.*, Dec. 1918.)

THE TREATMENT OF MALARIA

With a view of ascertaining the comparative efficacy of large doses of quinine as compared with small doses in the treatment of malaria, both combined with adrenalin and pituitrin, J. H. K. Sykes, Temporary Captain in the Royal Army Medical Corps (*Pract.*, Dec. 1918, p. 346) placed the patients as they were admitted to the hospital in one of two groups.

The treatment extended over three weeks and that common to both groups was as follows: The patients were kept in bed the first week, allowed up half the day the second week, and all day the third week, with physical exercises and route marches. On admission, quinine sulphate grs. xx, and aspirin, grs. x, were given. At night, calomel grs. iii, followed in the morning by mistura alba. All the quinine administered was in solution. A mixture of citrate of iron and ammonium, grs. x; liquor arsenicalis, m. iii; water to make one ounce, was given three times a day after food during the three weeks, the dose of the arsenical solution being increased by one minim at the beginning of the second and third week. On the temperature becoming normal, the patients were placed on ordinary hospital diet.

In addition to this treatment, the special quinine treatment was as follows:

In group A, during the first week, 20 grains of quinine sulphate were given daily, four hours before the expected attack. During the second and third weeks, 3 grains of the drug were given every three hours through the twenty-four. A hypodermic injection of pituitary solution, 0.5 mil, was administered every fourth day, two hours before the quinine dose.

In group B, during the first week, 20 grains of quinine sulphate were given daily, four hours before the expected attack. During the second week, the dose of quinine was reduced to 17½ grains. During the third week, the reduction was carried to 15 grains. One mil of adrenalin solution was given every fourth day before the quinine dose.

On discharge, each patient was given a sufficient quantity of quinine to last for several days. Also, his medical officer was asked for further information and it was requested that the patient should receive 60 grains of quinine weekly, if possible, in daily doses of 10 grains, excepting Sundays, until three months had elapsed since the last attack. In case of a relapse, information was asked for.

In both groups, patients improved rapidly as to their general condition. In group A, twelve patients, or 72 percent, relapsed within three months. In group B, three only, or 25 percent, relapsed.

The author does not think that the administration of pituitrin or adrenalin caused the difference in the results of the two methods. He concludes that this is decidedly in favor of the large-dose treatment, in contrast to his previously conceived notion, and better than the results obtained previously by intramuscular injections of quinine.

THE PREVENTION QF BLINDNESS

The National Committee for the Prevention of Blindness, 130 East Twenty-Second Street, New York City, has issued, as Publication No. 9, a summary of the state laws and rulings relating to the prevention of blindness from babies' sore eyes. Physicians are urged to ask for copies of this summary for their information. It indicates a very gratifying improvement in legislative action in this matter.

The first statutory requirement which should be made by all the states would seem to be the compulsory reporting of all cases of babies' sore eyes to the local health officer, with a penalty attached for not doing so. Medical attention could then be provided for all uncared-for cases, while the information secured regarding babies who are attended by physicians, as well as those who are not, would be valuable in showing the frequency with which this disease occurs and the frequency with which injury results from its neglect.

Let's Talk it Over

Studies on Food Economics

Alcohol as a Food

IN the month of May, 1900, I read a paper before the American Medical Association, in session at Atlantic City, New Jersey, which was afterward published in *The Scientific American Supplement* for June 6, 1900. This paper was intended as a refutation of the proposition of Professor Atwater, published in Bulletin 69 of the United States Department of Agriculture, that alcohol is a food. Below I give a synopsis of this article.

As I understand Professor Atwater, he claims that alcohol is a food, inasmuch that it is oxidized in the system the same as starch, sugar, and fat, in which process force and heat are generated. Hence, that it can act as a substitute for such foods. Let me quote his own words: "It has been claimed that I say, that alcohol is a food. Mrs. Hunt says she understood it so. If anyone did understand it so, let me say again what I said yesterday: Alcohol, if a food, is only a very limited food."

In the same address, he is reported as saying: "Is alcohol a narcotic? Why, yes, I suppose it is! . . . . . Is alcohol a poison? Why, yes, under certain circumstances alcohol is unquestionably a poison, a narcotic poison."

Again he is reported as saying: "Alcohol can not serve for building body-tissue. It contain no nitrogen, but, it is commonly supposed that it can be used in limited quantities for fuel. These experiments (at Wesleyan University) were planned to compare its action as fuel with that of the fat, sugar, and starch.

If these reported statements of Professor Atwater are correct, then, in his output of the results of his experiments he has been greatly misunderstood. As I understand his teachings, they simply amount to this:

Alcohol being oxidized in the body, and oxidation being but a form of combustion, therefore, "when partaken of by man in limited quantities, it performs a like function with sugar, fat, starch—that is, the production of heat; therefore, alcohol can with propriety be classed as a food." He does not claim it is a good or a proper food or that it can be substituted for natural foods, such as fats, sugars, and starches, but, on the contrary, he claims it can be used only in very limited quantities as a substitute for these foods, and that it is a narcotic poison.

This, then, is the outcome of those great an costly scientific experiments heralded at great expense through this broad land, to the deep concern and horror of the unscientific temperance-people, and of such great comfort to the lovers of the "social glass".

Professor Atwater's own figures, as set forth in Bulletin 69 of the United States Department of Agriculture, do not support his claim.

He states that, whether the body (of the man experimented upon) was at rest or at work, it held its own just as well when alcohol formed a part of the diet as it did with a diet without alcohol. His tables, on the other hand, show at once that, when alcohol is substituted in part for carbonaceous foods, there is an increased loss of body-nitrogen.

I can not, therefore, understand or accept his statement, that "alcohol protected the material of the body just as does the corresponding amount of sugar, starch, and fat". —(Prof. Seneca Egbert, of the Medico-Chirurgical College of Philadelphia, and Prof. Frank Woodbury, of the Philadephia Polyclinic College for Graduates.)

"The third conclusion, that the alcohol protected the material of the body from consumption just as much as the corresponding amounts of sugar, starch, fat is

far from being a justifiable conclusion from data given in Bulletin No. 69. The experiments there in which alcohol was used show an actual loss of nitrogen, showing a consumption of the body-proteid during the period.

"Professor Atwater can draw but one tenable conclusion from Bulletin No. 69; namely, alcohol is oxidized in the system, but, is not a food."—Winfield H. Hall, professor of physiology.

"One fails to find any support for the view that alcohol, like corresponding amounts of sugar, starch, and fat, protects the body against proteid waste, in Doctor Atwater's own figures. Thus, in experiment 7, where 417 Grams of proteid were given in four days, there was a loss of nitrogen equivalent to 48.2 Grams of proteid.

"In the other alcohol-experiment (number 10), there is a similar though smaller loss of nitrogen. One is compelled to admit that these experimental data do not support this third conclusion of Doctor Atwater.

"Indeed, if persons on a diet adapted to keep them in nitrogenous equilibrium regularely showed such losses of nitrogen while using acohol, as are shown in Doctor Atwater's tables, we should have very satisfactory evidence that alcohol was acting as a poison to the cells of the body; that is, as a protoplasmic poison.

"The two Atwater experiments with alcohol (in Bulletin No. 69) were carried on for so short a period that they throw no light whatever on the food-value of alcohol when used continuously.

"Even if these experiments demonstrated that alcohol can replace a portion of ordinary nonnitrogenous food during four days in a healthy man, this fact would afford no scientific basis for the view that such replacement can be indefinitely carried on without detriment to the organism.

"It is difficult to believe that an investigator occupying an important government position should be so unintelligent as to give utterance to views favorable to the use of alcoholic drinks on the strength of experiments of such limited scope as those published in Bulletin No. 69." (C. A. Herbert, M. D., professor of pathological chemistry, University and Bellevue Hospital, Medical School, New York.)

Prof. H. W. Conn, Prof. Atwater's associate in the above-named experiments, took care at an early date of their discussion to place himself before the public in the following reported position:

"Alcohol is not used as a food. It is always used for its influence upon the nervous system, and one of the well-known results is, that, at least among Americans, the use of alcohol in small amounts is almost sure to pass speedily into its use in large quantities.

"To state that alcohol in any quantity is safe, is a woful misinterpretation. No one can state what is a small and what is a large dose.

"A physicist could experiment with gunpowder and prove it is easily oxidized and give rise to a large amount of heat and energy. From this, it might be argued that gunpowder is a most useful kind of fuel for cookstoves.

"Such a conclusion would be hardly less logical than the conclusions that have been drawn from these experiments with alcohol, and which regard it as a useful food for the body.

"Gunpowder is a very unsafe fuel, because of its secondary effects, and, in the same way, the food-value of alcohol can not be determined by its power of being oxidized, but, must include the consideration of its secondary effects as well."

But, suppose we do for a moment stop and admit for the sake of argument that alcohol in limited amounts, on account of its being oxidized in the body and, therefore, of liberating latent energy and generating heat, may be classed as a food, does it not logically follow that all those drugs and chemicals that undergo oxidation in the body are foods "when taken in limited amounts", whether they be narcotic poisons or anesthetics, and must, in consequence, be admitted into our lists of foods?

Another thought! It is claimed and admitted that alcohol, being an anesthetic and narcotic, has the power (and exerts the same) of dilating or relaxing the small arteries and capillaries, admitting a larger portion of blood than ordinary, and that the blood at this point loses a large amount of heat; and it is further claimed, and has not been successfully disputed, that the loss of heat in consequence is greater than that produced by the oxidation of the alcohol.

If these statements and positions are correct, what becomes of the hypothesis that "alcohol is a food to a limited extent"? What sort of bank assets would a man have who, having on deposit $25, deposited

$25 more and drew out $50? You would say that man's assets were nil!

Likewise it is with alcohol: it does oxidize in the body, liberating heat, but, it at the same time causes a greater loss to the body in another direction by its poisonous action on its tissues.

A. T. CUZNER.

Gilmore, Fla.

[*To be continued.*]

INFLUENZA—A "BUMP"

Reading CLINICAL MEDICINE and *The Medical Council* this week, one would think we had better go back to Bible times and "send for the Elders and be rubbed with oil". The writers seem to me good writers but darned poor doctors. I saw ten cases of influenza last night in two families and twenty-eight the day before—one, with a temperature of 103, gave birth—seems to be doing well under the circumstances. I can record two more cured of pneumonia—only one death out of seven cases. Now, I can do more for my pneumonia with 1 drop each of fluid extract aconite and fluid extract digitalis every three to four hours than anything I can give, with frequent bathing of entire chest with equal parts of spirits of turpentine—camphor—coal oil and lard. Don't use much phenacetin or quinine.

Did I tell you, out of four to five hundred "flu" cases I only lost one? There were five cases of pneumonia and the one death occurred because my whisky gave out. Ammonia and strychnine did no good.

W. S. CLINE.

Woodstock, Va.

—

[Perfectly simple, is it not? Yet . . . we fear that Doctor Cline was somewhat in the opposite direction to that which he blames in us and in the writers to the *Medical Council*. We confess to having conceived a wholesome respect for influenza and it keeps our thinker going to decide upon those therapeutic measures that are most suitable for each individual patient (not, case). Undoubtedly aconite, or aconitine, and digitalis, or digitalin or digipoten, will work well in some cases. We have noted several instances, however, in which this combination was not sufficient and additional measures had to be adopted. The treatment outlined by Doctor Cline undoubtedly is good. To the present writer it does not seem to be adequate for all possible emergencies. Suppose some of the readers of CLINICAL MEDICINE come down on Doctor Cline and tell him what they think about it. Let's talk it over and let us find out how to treat—not, influenza but, patients ill with influenza.—ED.]

IS INFLUENZA CAUSED BY POISONED ATMOSPHERE?

I have been a reader of CLINICAL MEDICINE for a number of years, but I have studied influenza ever since its first appearance, last year, in New York, and, as my own opinion was so different from that of most writers of the medical profession, I lay low and said nothing. Ere long, you could see influenza referred to on every page in the papers, and the disease was running wild all over the country. One day, a fellow met me on the street, with a newspaper in his hand, and excitedly said: "Doctor, what are you doing about this new disease? Are you studying up for it? It is just awful, killing everybody wherever it goes." I hardly knew what kind of an answer to give, but, calmly replied: "O, yes, I am ready for it." Then the man wanted to know what about being inoculated as a preventive measure. I told him that a great many physicians were using a vaccine, but, that I would use that only in patients demanding it. This ended our conversation.

Now, right here, I wish to state that I never had any faith in antigrip vaccine, because it seemed that no one knew just the real cause of the disease. Some claimed that it is caused by the influenza-bacillus, others, that a mixed infection with pneumococcus and various forms of streptococcus and staphylococcus is the cause. Therefore, they resorted to the old shotgun prescription and gave all of them, in the hope that some among them would hit the mark.

A few days after that talk with the gentleman on the street, I was called six miles into the country to see two patients in the same home. They complained of a "severe cold," achey pains all over, especially severe pains in back and head, sneezing, and watery eyes and nose. "Influenza", I remarked. "But", said one of the patients, "where could we have gotten it? We have not been away from here in three weeks and no outsider has been here."

Later, it proved to be genuine cases of influenza, as it is called by so many.

I began to be a strong believer in a poisoned atmospheric condition; but, I was afraid to mention this notion, for fear that I should be called "fogie". However, my next thought was as to a course of treatment. Therefore, instead of looking for something new, I resorted to the old common-sense treatment. First, to give a purge, then something to relieve the pain and reduce the irritation and inflammation; and for this, I gave equal parts of quinine, Dover's powder, and phenacetin, with just enough powdered cascara to counteract the binding effect of the Dover's powder. For the cough and heart, I gave compound of syrup cocillana, with ammonium chloride, although in some cases where the heart gave much trouble, I also gave digitalis.

The treatment was so satisfactory, that I employed it almost as a routine, except in some instances where the patient required a laxative every day and others an intestinal antiseptic, for which I gave iodized emulsion. Now, here is the point I wish to make—excepting a tuberculous family of six, who had no one to cook them food or even to give them medicine (they had to get up out of bed and get their own medicine, and five out of those six died), I never lost a single one out of my 200 patients. One other patient died after having had the disease two weeks and in whom pneumonia developed, sending for me only a few hours before death ensued. But, then, that was because of his neglect, and not, really, my case. I do not know but that this may just have been Providence, but, I certainly felt rejoiced over these few deaths.

The epidemic passed by and I kept silent until today. A friend of mine from New Orleans dropped into my office for a few hours' chat; he mentioned the influenza, having lost some relative during the epidemic in his home city. I could not be silent any longer; therefore, I told him of my belief, that this disease depends upon a poisoned atmospheric condition. In support of my view, I wish to state that, after treating all my many patients, I never contracted the disease myself, using no preventive other than fresh air and an oil spray. However:

Last week after having had no case of influenza for six or seven days, one night I burned a considerable amount of gasoline in a room adjoining my bedroom, vulcanizing some auto-tires. On retiring, I failed to raise the windows, while the door between the two rooms was opened. The next day, my wife and I experienced all the symptoms of influenza. We immediately began the treatment above explained, and in twenty-four hours we were able to get out of bed, with only some nervousness, soreness, and weakness remaining. So, after talking with my friend in my office, I went to the post-office and there found my December number of CLINICAL MEDICINE. Opening it, the first article I read was Doctor Croft's, of Chicago, who spoke of a poisoned atmospheric condition. Well, I must say, I rejoiced again as this was the first man to speak of the cause of influenza as I believed it to be. Now, I do not think that Doctor Croft, of Chicago, will feel complimented to know that a "Hill Billy" doctor down in Osyka, Mississippi, agrees with him regarding the cause of influenza, nor will he consider my differing with him as to the treatment of any importance; but, just a few remarks, please.

Doctor Croft states that opium in every form is contraindicated, as it checks all the secretion. From my experience in the use of Dover's powder, I fail to see where and why it is contraindicated. I agree with him that acetanilid is contraindicated. But, nothing seems to ease the pains better than phenacetin and Dover's powder in 2-grain doses repeated every two or three hours; and that, surely, is not enough to do any harm to the heart; and, as Dover's powder contains ipecac and I combine cascara with it, that overbalances the decreasing effect of the opium upon the secretions; and, yet, we get, from the opium, the reduction of the irritation and inflammation of the mucous membrane. Therefore, we must have had the bacillus catarrhalis, pneumococcus, and the different forms of streptococcus- and staphylococcus-germs in our nostrils, while the poisonous gases prepared the field for their growth, thus confusing the microscopists. But, I have never realized any results from inoculating these germs for influenza.

OLIVER B. BARRON.

Osyka, Miss.

—

[We can not help but think that the great importance in the causation of the influenza of the present epidemic that is attributed to a vitiated atmospheric condition

is somewhat farfetched. We do not deny that atmospheric disturbances may play a certain role, but, it is difficult to see how this can produce a disease that presents all characteristics of an infective malady. Moreover, serious disturbances in atmospheric conditions, such as may be assumed to have been active in European regions, did not exist in our own country. We do, however, have to deal with the psychic factor of a pronounced mental disturbance of the entire nation, owing to the war. Further, here, as well as in Europe, the element of crowd-influence enters especially in the enormous military and naval camps, and the present writer believes this to have been a far more fruitful agent in promoting the virulence of a given infectious disease than the atmospheric factor adduced by Doctor Barron.

However, this view is before the meeting for discussion. Doctor Barron agrees with Doctor Croft. Are there any other speakers?—ED.]

INFLUENZA IN GUATEMALA

This terrible epidemic of socalled influenza is desolating Guatemala, as well as other places. It is the worst thing we have ever faced, and the death-toll is enormous, especially among the poor ignorant Indians. These have been found by scores dead and dying along the public highways and the scenes of suffering and need would melt the hardest heart.

Of course, this thing had to come when there was least preparation for it, when the supply of drugs was at its lowest ebb in the country, owing to the restrictions placed upon exportations from the United States, and when, in many instances, the vital resistance of the people was low because of scarcity of food.

Here, we have had some 400 deaths, principally among the Indian population, but, in some other towns, the number is very great, and in one town near here, the 2,000 mark has been reached, with almost identical toll in many other places. Reports from Mexico are more alarming than those from this country, and the percentage of deaths is very large, indeed.

We have been working day and night here, and have been very successful in the treatment of the infected ones, even though some of the symptoms have been very severe, such as profuse hemorrhages from the nose, eyes, lungs, and intestines. In some cases reported, the eyes have ruptured, and I was able to cure a little child whose eyes were almost destroyed by severe hemorrhages.

I have found that calx iodata, in 5- and 10-grain doses, often repeated, is one of the best remedies, given in association with salol and eupatorium. I also have used lobeline sulphate and gelseminine hydrobromide hypodermically, besides streptococcic-pneumococcic bacterin.

In two cases, I gave echinacoid in large doses, with the result of a very quick recovery. I believe the ideal treatment would be, hypodermic or intravenous injections of echinacea and calx iodata, if possible to prepare.

I have prescribed enormous doses of calcium sulphide, but, with only indifferent success, I finding it no better than the remedies aforementioned.

I have to report, with great sorrow and the most profound regret, the premature death of Dr. Alvin M. Struse, director of the Rockefeller Foundation in Guatemala, who has just fallen a victim of pneumonia consequent upon a severe attack of this devilish "influenza". (Some Hun name should be given this disease, as it has all their characteristics.) It is too bad that medical science could not save Doctor Struse, a young man, robust, and in the fullest possession of all his wonderful talents. It almost makes me rebel, when I think of the limitations of man! Dr. Struse was in the early thirties, but, had given several years to the finest kind of work in this republic, for the good of suffering humanity, in his campaign against the hookworm; later, his magnificent work in earthquake-ruined Guatemala City, where he served as director of the Red Cross work; still later, in his noble campaign against yellow-fever, which had just been eliminated from the country; and now, in his activity against this devil-hunnish disease, which claimed him as its victim.

I wonder why the more useless ones are not taken! Why must the best and brightest and noblest souls be cut off, when they are so few? And especially in these countries, where such men are, indeed, scarce!

Doctor Struse had been appointed chief of the national board of health, in which capacity, his great ability and keen intelligence made him doubly useful to the people, since that work was in line with

the Rockefeller plans and gave him greater liberty.

He is deeply mourned by thousands, yes, by the entire country, and the worthy President of Guatemala, in answer to my telegram of condolence, is the spokesman of two million people when he says: "You have said the truth: We have lost a loyal, sincere, and disinterested servant of my country. God has received him in His bosom, and his family will receive the blessing of everybody."

The President loved him, as did we all; we are heartbroken at his disappearance. I doubt whether the Rockefeller Foundation will be able to fill his place here.

C. F. SECORD.

Chichicastenango, Guatemala, C. A.

INFLUENZA IN IDAHO

The first diagnosed case of influenza in the city of Pocatello (Idaho) was isolated October 10 and, in the eight weeks following, over 4,000 patients were treated, and, of these, 141 died, all from pneumonia. The number of cases increased rapidly and reached the highwater mark of 85 cases in one day. During the week of November 3 to 10, inclusive, there were 250 cases and 37 deaths.

Pocatello is a city of 16,000 people, including over 2,000 employees of the Oregon Short Line. The disease was especially severe among these workmen and the contagion was rapidly carried by them to every part of the city. In nearly every instance where an attack occurred, other members of the respective families contracted the disease and helped to spread it to relatives and friends who volunteered assistance in nursing. Isolation of the patients, where possible, was more effective than was close contact; it being found that close contact of mild with severe cases increased the mortality of the disease. Mild cases did not improve as quickly as they should, under such conditions. Fresh warm air and good nursing—unfortunately, not always available—and soft diet met the indications.

The symptomatology is similar in all the cases, although differing in degree. Headache, chilliness or a distinct rigor, backache, the one symptom generally present, in addition to high fever, burning in the larynx, quick onset, and, in a few hours, prostration or great weakness. If the patient went to bed, sweated, was properly guarded against chilling and forced to remain in bed for four or five days, the attack nearly always has been mild. If he is exposed or chilled in any way, as by uncovering the arms or putting the feet from under the cover, respiratory complications invariably are the rule. The cough becomes more frequent, dry, hacking, and the patient complains of soreness or tightness in the chest or down the length of the sternum. There is frequent complaint of hoarseness and croupy cough, not alone in children, but, also in a few adults. Children have high fever, with somnolence, but, no backache or headache; in others, there may be restlessness and vomiting. In very young children, vomiting and convulsions are observed. The cough is aggravating and hard to control.

Nosebleed occurs in a great number of the cases. At the height of the epidemic here, there were many cases of severe hemorrhage from the nose and throat, from the bowels, and from the lungs. In cases with lung complications, the sputum is hemorrhagic, from pink coloration to clear blood. In late cases, those in which there was almost complete consolidation, there were a few instances of prune-juice expectoration. There is elicited the peculiar flat percussion-note over the affected part, usually found first at the bases of the lungs or at the margins of the lobes. Crepitation appears early. Severe pain is a symptom in many cases. A few patients show pleural effusion.

One case of empyema occurred, and many of sinus and mastoid invasion, also of median otitis. There were encountered a few cases of meningeal involvement, with hemiplegia. Low-muttering delirium occurring with low temperature after a run of 104° to 105° F. One case of herpes zoster followed a mild attack. Then, there is the "flu-eye," a photophobia of mild degree; no tonsillitis is seen to any marked extent; but, laryngitis and bronchitis are common. In the pneumonia-cases, there is high fever, with a good pulse—about 100 or less—slow respiration, usually 26 to 36, until respiratory and cardiac failure is imminent. Acute dilatation of the heart may occur suddenly, the patient progressing favorably up to that time. There were several cases of acute septic endocarditis.

There occurred a few cases of the abdominal type. These victims have acute

diarrhea and a typhoid-like range of temperature, running for from four to seven days at 104° to 105° F. In some of these, there was hemorrhage from the bowel, with tympany and prostration.

I institute quarantine of all persons in the household and strict fumigation after the disease had subsided, and isolate the patients for ten days thereafter. It is my belief that these patients are carriers and the use of chlorazene and dichloramine-T, in the form of sprays, will tend to limit the spread of the disease, while in strict quarantine we have one of the most useful of the methods advocated for the control of this infectious disease. In this, I am aware, I am going far beyond the stand taken by other health-officers in this state and the state of Utah and perhaps in most localities; yet, I am certain that I am right. At any rate, on instituting quarantine of the household, the sick and the well, the number of new cases diminished rapidly, and one new case a day was the rate for two weeks.

In the beginning of the epidemic, I made the cases reportable in this city, and the state followed suit. I advocated closing of the schools at once, and think it the proper thing to do. The state followed suit in ten days. We stayed closed here until the deaths were about 2 a week, and then we opened the schools, so far without any increase in new cases. If we are again invaded, the infection will come from the outside.

The treatment has been symptomatic. Fresh air (not cold), nursing, isolation, frequent feedings of small amounts of liquid food meet the indications in the early stages. The salicylates or acetylsalicylic acid, without Dover's powder or acetanilid or quinine, and hot drinks, so as to produce sweating, will relieve the aching and headache and reduce the temperature. Keeping the patient covered and protected from exposure or drafts will prevent lung complications.

Influenza-vaccine seems to have given results in the early cases. "Clean up" and "keep clean" still holds good in this as in all other diseases. Free evacuation of the bowels, free action of the skin and kidneys early in the disease lessens the toxemia and hastens recovery. A preliminary course of calomel followed by castor-oil and then by daily soapsuds enemas seem to act better than magnesium sulphate. Citrate of magnesia, also, is well tolerated by the patient.

For the burning in the larynx and bronchi, the cold-pack or the icebag will invariably relieve. In patients that do not stand the application of cold (and, in influenza, cold applications are not well born, as a rule), calx iodata, one to three tablets (gr. 1-3) every hour until relief, and then every three hours, will do the work promptly. It has done exceptionally well in the complications especially in children with laryngitis and bronchitis. In the hoarse, croupy cough of laryngitis, it is best given in hot solution, with emetine. The dose may, with benefit, be increased, for adults, to 1 or 2 grains every two hours.

Geseminine hydrobromide is indicated in high fever, flushed face, full bounding pulse, together with veratrine hydrobromide to effect. In children, gelseminine is a certain remedy for the above indications. It relieves the backache and restlessness and is given in the early stages of the attack in association with aconitine hydrobromide, and with calx iodata, if there is respiratory irritation.

In sleeplessness, I have found somnos of benefit, without any resulting depression. All narcotics are to be condemned in this disease. They are unnecessary and, in the respiratory complications, are deadly. Pain can be relieved in other ways—by external applications, such as hot camphorated oil and oil of turpentine, libradol, (very efficient), hot-water-bag, and the pneumonia-jacket.

Cough is relieved by inhalations of steam and eucalyptol. Plenty of fresh air, without chilling the patient, is one of the greatest aid to control the cough. Expectorants are of little benefit. Sweating relieves in the early stages.

There takes place a great loss of chlorides, and these may be supplied by means of enteroclysis and by drinking the alkaline saline waters. Sodium bicarbonate and sodium chloride may be injected intravenously, glucose to be added in the proportion of 2 to 5 percent.

In the pneumonic cases, nuclein, 1 mil (Cc.) subcutaneously, should be given twice or three times each twenty-four hours, in order to increase leukocytosis. In this disease, there is leukopenia, and nuclein is the logical remedy.

Antipneumococcic serum has been employed in many cases, with good results in

some and without seeming results in others. The good results were shown in an immediate drop of temperature. A patient with bronchopneumonia of seven days' standing, with a temperature of 104 to 5° F., and increasing consolidation in the right lung, and slight invasion in the left, was given 120 mils of the serum beneath the breasts, and a subnormal temperature followed in twenty-four hours, with no further rise, and with immediate resolution. Three others in a serious condition were given 500 mils intravenously, without much effect on the condition. A number were given 50 mils subcutaneously, with decided benefit. The doses were repeated at 12- to 24-hour intervals. Nuclein was given with benefit in reducing the temperature and increasing the resistance of the patient. In one case 50 mils of the Carrel-Dakin solution was given intravenously, with a decided lessening of the toxemia, as shown in the mental condition and a decrease in the number of respirations. This patient died of double bronchopneumonia. The cyanosis was very marked, the temperature high and respirations over 60. The prognosis was bad from the beginning. The solution named was given as a last resort and might have been of greater benefit earlier in the attack. The bacterins and vaccines have been used frequently, but, not with any great benefit in the pneumonic stage of the disease.

As a prophylactic, vaccine seems to be the only remedy we have to control the disease and, in conjunction with strict quarantine, will do more to limit the number of attacks than will any regulation toward closing the places of business and limiting crowds. Isolation of the patient in central isolation-hospitals is an excellent means of control, especially where nursing-aid is deficient and physicians are overworked, as is the case in every community at the present time.

The army supplies, cots, and blankets, doubtless will be stored for future demand and become moth-eaten and worthless in the waiting. There is an immediate need for all such material in hundreds of communities all over this land, and the logical solution of what to do with these supplies is, to place them at the disposal of the state authorities for use wherever needed. That they will be needed soon, when the recurrenc now anticipated is a thing present, goes without question. Then the question of isolation of the patient will be solved and the spread of the epidemic controlled.

R. J. SMITH.

Pocatello, Idaho.

A SPECIFIC FOR INFLUENZA

I have thus far treated about 400 cases of this disease. About 35 had pneumonia as a complication. One patient, about 10 years of age, developed colitis as a sequel but is convalescing. One had suppression of urine, and pneumonia. Another developed, in addition to pneumonia, enteritis, cervical adenitis, otitis and meningitis. A few had otitis media.

I wish to state, parenthetically, that the socalled pneumonia is generally a sort of edema of the lungs due to failure of the lesser circulation and is not inflammatory as is pneumonitis.

Early in my treatment I lost 5 cases altogether. In the last 100 cases, however, I had no deaths whatsoever. My treatment is symtomatic avoiding all depressing remedies especially coaltar derivatives. My lack of fatalities with the last 100 cases, I attribute mainly to my use of a serobacterin of a very heavy suspension containing in each cubic centimeter 1,000 million influenza bacilli, as well as 1,000 million of each of pneumococcus and streptococcus. The average beginning dose for an adult is 3-10 mils of the above suspension. For infants or children 1-10 mil. I have given this last dose to several infants and generally one or two doses is all they require even with a severe complicating pneumonia, so called. If improvement is not manifest in 24 hours and no symptoms of a reaction supervene, I increase the dose by 1-10 mil. The increase is kept up till improvement is manifest after which the interval between doses is lengthened—oftentimes no more doses being required. I have seen 4-10 mils produce focal and constitutional reaction in a patient within in 24 hours, which subsided in 72 hours, leaving the patient convalescing.

I am confident that, if this heavy suspension is used on well individuals, it will produce symptoms similar to those of Spanish influenza. I urge the cautious use of this serobacterin. It will do the work as nothing will. It is as nearly a specific as is quinine in malaria. As stated above, if a reaction follows the vaccination, a

repetition usually is not called for, for, it will prove curative.

M. SHADID.

Carter, Okla.

HYOSCINE AND MORPHINE IN INFLUENZA

Mrs. C. S. B., my youngest daughter, aged 23, in the seventh month of gestation, had a very mild attack of influenza, accompanied by the usual symptoms of a mild attack of the catarrhal form of this widespread disease. I first saw her on October 22, and, by the 25th, her temperature was normal and she was "feeling fine", to use her own expression. On the 27th, she was allowed to spend the day with her sister, residing in this village. On Sunday, I brought her to our home, she ate a good meal at noon, and still was feeling good.

By the middle of the afternoon, however, she had grown restless and nervous. An examination showed a temperature of 101° F. She was put to bed and remedies were administered for fever and nervousness. Next day, October 29, not much change was apparent. On Tuesday morning, cough made its appearance, and every attempt to cough provoked vomiting. Her temperature now was 102 degrees. The remedies administered to allay the cough and vomiting did very little good. Examination of the chest at 6 a. m. was negative. She still vomited at every attempt to cough. I examined her at 10:30 a. m. The temperature stood at 102.3° F. An area of about 2 inches in diameter, about 3 inches from the median line toward right, just above the free border of the costal cartilages, emitted crepitant rales (percussion negative, on account of the liver). There was rapid superficial breathing, face was flushed, she complained of a feeling of extreme illness and increased nervousness, vomiting continued whenever coughing was attempted, her pulse was 88, and respirations were 40. Diagnosis: lobar pneumonia in the stage of engorgement. Treatment: aconitine hydrobromide, gr. 1-800; digitalin, gr. 1-64; codeine, gr. 1-12; two granules of each as the initial dose, thereafter one granule of each every fifteen minutes until the patient slept. Four hours of this treatment did not allay the nervousness. She coughed several times, vomiting whenever coughing was attempted. A little rusty sputum was expectorated.

At this point, because I wished to control the cough, vomiting, and the extreme nervousness, a hypodermic of the half-strength granules of hyoscine and morphine was administered, using half of the standard dose. The patient slept within thirty minutes, resting for two and one-half hours. Upon awakening, the coughing and vomiting returned. A little more rusty sputum now was expectorated—tough, glairy, tenacious. Another half-dose of the hyoscine and morphine combination now was given. She again slept for two and one-half hours more, except when awakened, every fifteen minutes, in order to administer some aconitine and digitalin.

At this point, I retired and instructed the nurse to continue the aconitine and digitalin every fifteen minutes, unless sweating occurred, and to call me at midnight. The temperature now stood at 103° F. I was awakened by the patient coughing and vomiting. This was at 1:30 a. m. Another hypodermic of the hyoscine and morphine was given. I wanted her to sleep. Her temperature still stood at 103 degrees. The nurse was relieved, I taking charge. The treatment was continued. At 2:30 a. m., the temperature was 101.3° F. The intervals were lengthened to thirty minutes. At 3:30 a. m., the temperature was down to 100.2 degrees, and she was perspiring. The intervals were lengthened to one hour. At 4:30 o'clock, the temperature was 99.3° F.; she was perspiring. At 5:30 o'clock, the temperature was 99 degrees—which held throughout the day. At 6:30 a. m., the patient awoke and said that she felt fine. She again went to sleep promptly and slept during most of the day. By evening, her temperature was normal and never again went higher during the rest of her illness. Her recovery was uneventful, and her convalescence prompt and uncomplicated in any way.

The only excuse for this report is, that I wish to call the attention of the readers of this journal to the part that the hyoscine-morphine combination played in this instance. I am convinced that it constituted a large factor in aborting this attack of pneumonia, and I firmly believe that this treatment saved my daughter from a prolonged and serious illness, the results of which under any other form of treatment known to me would, in all probability,

have resulted in an abortion and subsequent death.

The salient points are these three; early diagnosis; prompt administration of remedies of proved efficacy; and keeping my patient asleep and unconscious of the seriousness of her condition until the disease was subjugated.

Pain, restlessness, worry, fear, and nervousness only aggravate and increase any illness. Sleep annuls them all.

I sincerely trust that the medical profession may ultimatey be brought to realize that there is a more excellent way of practicing medicine than by simply following blind leaders of the blind. For, "there are those who know, and they know that they know; and there are those that know that they know not." But worst of all, "there are those that know not that they know not." And, hence, they will not even try the better way.

That alkaloidal therapeutics may grow strong, live long, and spread fast, is the sincere wish of one who, though doubting, tried it out and made good many times.

Yours for more knowledge and better treatment of the sick.

P. S.—On Saturday, December 14, 1918, this patient gave birth to a girl baby weighing 8 pounds. At this date of writing, December 16, mother and babe are both doing splendidly.

J. W. SHOOK.

Canal Winchester, Ohio.

—

[The favorable course of the disease in this instance, after the patient had been brought fully under the influence of narcotics, naturally is of great interest. Yet, we are not ready to admit that it was this factor in the treatment that determined the happy outcome; the other measures adopted by Doctor Shook undoubtedly having been contributory. Nevertheless, the absolute quieting of the nervous system probably enabled nature to mobilize its resisting forces against the microorganisms responsible for the pulmonary congestion. As to this, though, the point may be raised that the administration of morphine has been demonstrated to diminish leukocytosis, and, so, a contradictory factor enters into the argument.

The problem evidently is not as simple as appears upon the surface, and we should like others to air their views upon it. What do the readers of CLINICAL MEDICINE think about it? Won't you give us your criticism upon Doctor Shook's management of the case reported, immaterial whether this criticism is favorable or unfavorable?—ED.]

SODIUM HYPOSULPHITE AS A "FLU" REMEDY

Have you ever considered sodium hyposulphite in big doses, largely diluted, taken at suitable intervals, as a remedy, prophylactic and curative for influenza? If not, and you feel sufficiently interested, give it a trial without delay. Results may please you. Even the bicarbonate of sodium has some effect.

J. H. Beynor.

Spokane, Wash.

—

[The hyposulphites, as well as the sulphites, act mainly through the sulphur of their composition. Unfortunately, they are quite irritating as well as depressing. Personally, this present writer can not see any advantage in using either the hyposulphites or the sulphites in preference to calcium sulphide, since, according to Sollman, virtually, they act in the same manner. Calcium sulphide, of reliable quality, has "made good" in wide clinical use its claim to recognition, and, besides, is harmless, while the other preparations referred to easily may give rise to troublesome and even alarming symptoms. For himself, therefore, the present writer prefers the calcium sulphide.

Another point is, the employment of an alkali. Sodium bicarbonate, or, better, calcium carbonate is of unquestioned value as all these patients without exception present a very high urinary acidity.

Has anybody else, besides Doctor Beynor, employed sodium hyposulphite? If so, with what results? Let us hear about it, please.—ED.]

—

TARTAR EMETIC IN INFLUENZA

In response to your appeal to members of the profession for "suggestions, admonition or advice" as to the treatment of patients suffering from the socalled influenza, I will point out the fact that virtually death from this disease, in every instance, immediately results from capillary

bronchitis or bronchopneumonia or pneumonia or pneumonitis. For at least thirty years, I have regarded antimony and potassium tartrate, given in minute doses, as a specific and have used it as such in the conditions so often present in grip this fall, and also frequently in children when the disease is not prevalent. I firmly believe that its universal use would practically prevent deaths from grip.

During the recent epidemic, I gave personal attention to 124 cases of influenza. Early in the epidemic, I lost 3 patients from bronchopneumonia, largely owing to the entire absence of any care of these patients. I had under care many other cases of socalled pneumonia, all of which yielded promptly to the tartar emetic in minute doses. Later, I gave to every patient 1-8 to 1 drop of wine of antimony every three hours. After adopting this course, there was an entire absence of pneumonic complications, except when these already were present when the patient was first seen. When so present, though, the condition was promptly removed by the aforementioned course.

Should you decide to publish this, I sincerely hope that, in the absence of definite information from the laboratories, this statement may reach a few members of the profession who, in view of the fresh invasion, are willing to try the suggestion, based upon clinical observation, of an obscure practicer like myself.

GEORGE M. AYLSWORTH.

Collingwood, Canada.

THE PROPHYLAXIS OF INFLUENZA

In answer to your request, in CLINICAL MEDCINE, for the best prophylactic for the "flu," permit me to say that my experience has proven that most satisfactory results may be obtained from 5 grains of quinine dissolved in 1-2 ounce of whisky, this dose to be taken, by those exposed, at 8 o'clock in the morning and at 4 in the afternoon. If the patient feels chilly, double the dose.

In addition, I usually give the advice to "keep away from people and out of crowds."

I hope that your readers will try this.

Dubuque, Ia. J. J. BROWNSON.

—

[A number of our good friends, some of the oldest, brightest, and best of them all—such men, for instance, as Dr. W. S. Cline, of Woodstock, Virginia—insist that good spiritus frumenti is, after all, the best or one of the best remedies we have for influenza. With this, we can not agree, and we must continue in our protest, even in the face of such strong support as that here given by Doctor Brownson.

Whisky is not a stimulant; on the contrary, it is a depressant. This is the testimony of every advanced pharmacologist. Instead of increasing resistance of the body, it markedly reduces its resistance; and in such a disease as the influenza—where the individual has need for every atom of defensive force for repelling the attack of this terrible infection—to administer depressants, can only be folly.

At any rate, that's the way we look at it. What say our readers? We have epitomized our suggestions for the prevention of influenza on page 805 of the November number of CLINICAL MEDICINE. Put in the fewest possible words, they are as follows:

1. Segregation or, as Doctor Brownson says, "keep out of crowds," and especially avoid contact with the sick.

2. Sterilization of the nasopharyngeal tract, for which chlorazene and dichloramine-T are the best antiseptics.

3. Protective vaccination, using a mixed bacterin of the type recommended by Rosenow, containing the organisms most prevalent in this disease.

4. Avoiding all fatigue, enjoying plenty of sleep, maintaining a cheerful frame of mind, and saturating the system with calx iodata and calcium sulphide.

Has anyone anything better to offer?—ED.]

A PROPHYLACTIC MEASURE AGAINST THE INFLUENZA EPIDEMIC

Below is the bulletin I posted in this company-town, where we employ 500 men in the lumber-industry. We also quarantined against outside places, and in this way kept the plant running at full capacity. Fright had as much to do with this epidemic as anything, and continually preaching to the people, that there was nothing to be frightened about, helped a great deal to keep them in good physical

condition; consequently, the "flu" never got a hold of us. The bulletin:

SPANISH INFLUENZA

"THE FLU"

Do not be frightened by exaggerated newspaper reports.

Do not think you have the "flu" just because you have a cold or the grip, as you have had many times before this.

I have received from Surgeon-General Blue, of the U. S. Public Health Service, complete instructions for the diagnosis and treatment of this disease. From these instructions and my own experience, I wish to advise everyone to be exceedingly careful about his general health, and there will not be any danger of the "flu."

At the first indication of a cold, get something for it. Use some kind of mild ointment in the nose, also an antiseptic wash for the mouth and throat or else use an atomizer with an antiseptic spray for the nose and throat.

If you have to sneeze or cough, use a handkerchief, so as to protect others. If you "catch a cold," eat less; in fact, eat nothing for twenty-four or forty-eight hours, but, be sure to take a good physic and to drink large quantities of hot water; also take a good hot bath. In other words, "clean out, clean up, and keep clean"—inside and out—and you will be healthy all the time.

The "flu" is merely an aggravated form of grip and is found principally in the centers of population where the people are crowded and congested, as in the army-camps. Brookings is not, in any way, congested, and, besides, is as healthy a place as it is possible to find. People here do not need to worry about this disease, as there is no danger if they take reasonable care of themselves.

Let each one keep clean, inside and out, then forget there is such a thing as disease, and Brookings will be one place on the map that will never have the "flu".

Yours for health,

C. H. LAW.

Brookings, Ore.

—

[This bulletin is excellent, and we are sure that it had the effect of comforting the people of Brookings and putting them in the right frame of mind in those cases of the disease that may have occurred in that community. The suggestions throughout are excellent.—ED.]

THE ORIGIN OF "DOUGHBOY"

So far as the present writer is concerned, "doughboy", as a nickname for our soldiers—first, in France, then here, at home—sprung up suddenly in the papers, and then without any attempt at an explanation of its application. It now seems, however, that the term originated during our civil war, according to a note running through the press, the more plausible of two explanations being as follows:

The original "doughboy" was a dough cake baked for sailors, and the doughboy nickname was first applied to the men of the navy. Thus, in a letter written by General Custer to his wife in 1867 he said: "Wasn't I glad I wasn't a doughboy!" Mrs. Custer made this note on the letter:

"A doughboy is a small, round doughnut served to sailors on shipboard, generally with hash. Early in the civil war the term was applied to the large, globular brass buttons of the infantry uniform, from which it passed by natural transition to the infantry themselves."

How the term came to be applied to infantrymen is not clear—; or, does, indeed, the other legend among the army men apply, namely: As one time, for lack of regular buttons for infantry uniforms, big bread-colored buttons for ladies' coats had to be utilized. Because of the resemblance of these conspicuous buttons to their daily hardtack, or "dough", the idea readily attached itself to the wearers themselves.

—

After the foregoing was in type, yet another explanation was supplied to *The Chicago Tribune* by a linguistic Parisian (who, by the way, pronounces our "doughboy" as being equivalent to the French "pousse-cailloux"), and he refers its origin back to our Mexican war of 1846, and in particular to the adobe huts encountered by our invading American army. Those red sun-dried bricks are named "adobes", which is pronounced a-do-bies. The author then goes on to say:

"The soldiers were only too glad to inhabit these houses, but, the cavalry, who were obliged to remain in the open, to

sleep in the field, owing to their horses, gave, as a joke, perhaps by jealousy, the nickname of 'dobies-dodgers' to their luckier comrades at arms. It became later 'dobies' by abbreviation; finally, in the many succeeding years, there was born, by corruption, the actual nickname, 'Doughboy'."

ADOLF G. VOGELER.

Chicago, Ill.

HOSPITAL WORK IN PALESTINE

How American Red Cross physicians engaged in relief work here are accomplishing worth-while results in the face of great difficulties—and what they are up against—is shown in a report received from Dr. W. S. Dodd, working at Mejdel, in Palestine. With two capable English trained nurses and three native helpers, more or less useful, Doctor Dodd, his "hospital" housed under tents, performed 252 operations in seven weeks, besides making medical examinations, and giving treatment and counsel to hundreds of the destitute inhabitants and refugees. His report says in part:

"The work of the Hospital was of the plainest sort, it might be called primitive. About twenty-five tents comprised the hospital proper, with a dispensary tent, and tents for the living-quarters of the staff. The soil was all the purest sea-sand, with thistles and scant grass; going barefoot was the universal custom, and, in our quarters, we of the staff used to follow that custom with great pleasure.

"The professional side of the work was of the greatest interest to me and every day was a pleasure. The clinics numbered sixty to a hundred patients a day. Of course, we had all classes of cases in medicine and general surgery, but, by far the larger proportion of our patients were eye-cases. Of the 252 operations that I did in less than seven weeks, 222 were for the eyes. This is the number of persons operated upon, most of them having more than one operation, perhaps on all four lids, so that I really operated upon 408 eyes.

"There were some cataracts, not more than would be seen in the same number of cases elsewhere, but, trachoma, and its consequences, accounts for almost all of the eye troubles in this land. I set out to treat these cases radically, and I secured fine results whenever I could hold the patients long enough for a reasonable after-treatment. But, even so, the number of eyes that can be saved from partial and total blindness is large and the economic value of each eye thus saved is enough to make the prosecution of this line of work of the greatest importance for the redemption of the land.

"The accident-cases always are interesting. I had the last end of treatment of some cases of bombed hands, of which there had been quite a number in the earlier days. These were largely in children and were due to their picking up unexploded Turkish bombs that were lying in the fields from the time of the British advance in the Gaza region. Many fingers and even hands were lost from this cause.

"Vermin was the great enemy we had to fight. Fleas hardly were counted as a problem, because we could do nothing against them—they were everywhere and inevitable—and, so far as we know at present, not being the carriers of any special disease, did not come within the hostility of a medical conscience. Lice and maggots were a daily terror. How many wounds and injuries came to us filled with maggots, I can not estimate. Among the natives, a favorite dressing for a wound is, a piece of raw meat—a regular breeding-place for maggots; and they can hardly be blamed for invading the adjoining premises. Many a child had to be put under chloroform, in order to search out and pull from their hiding places deep in the middle-ear a half dozen wriggling maggots whose every motion was causing torture to the innocent victim.

"A woman came to the clinic complaining of headache. A single sore on her face led to questioning, and, when she rather unwillingly undid her turban, she exposed an exaggerated case of impetigo, and every separate sore was as if the whole thickness of the scalp down to the bone had been punched out, and every sore was a nest of maggots. I removed 60 of them at the first sitting, and at the first dressing next day the nurse had more to do. The headache disappeared without further treatment. And these are not the most loathsome cases that we saw.

"Another great difficulty with which we had to contend was, the filthy habits of the people. In spite of our providing proper

sanitary facilities, we were compelled to have a scavenger go around every morning and clean up the filth from around the tents of the patients. The women were as bad offenders as the men. We made it a rule that anyone known to have violated these simple sanitary regulations must go without his dinner next day, and this proved quite an effective punishment."

THE COUNTRY-DOCTOR

The subject covered by the title of "The Country-Doctor" covers every branch of medicine. The country-doctor is supposed to look after the many and varied diseases, familiar as well as unfamiliar, common as well as uncommon, is expected to look wise, give a diagnosis, and to discuss, in a general way, the pathological conditions affecting both the normal and the abnormal physiological man. In this paper, I intend to follow the tracks and cover almost every phase of his daily work and what is required of him, and what he must be to measure up to the standard of efficiency set for him by the public.

Before the Days of Automobiles.

The country-doctor not only is a dispenser of pills, powders, and nauseous medicines, but, when occasion demands, he must also be a man "behind the knife." Antisepsis, both external and internal, should be the watchword of his everyday work. Correct conclusions and the knowledge as to how to arrive at them should be cultivated by him, for, how often do not we jump at conclusions without much thought, and, in the end, wonder why it was a given case did not terminate as we had hoped for. And, further, to quote our old reliable, but, now departed Doctor Waugh, "we insist that the country-doctor must not treat diseases, but, patients, who are afflicted with certain anomalies of function or with certain diseased processes."

A careful examination should be made in every case, no matter how trivial it may seem. A correct diagnosis makes more easy a correct plan of treatment, one that will not disappoint in the effects designed and looked for. As all of our disappointments come from incorrect diagnosis, we should strive to know that a thing is correct; knowing this, we shall be less likely to suffer disappointment in our expectations.

Surgery, both general and minor, will require a part of the country-doctor's time, and there is no excuse at this advanced age of medicine for his not being as well qualified for general and special surgery as for the practice of medicine, inasmuch as his opportunities for learning are just as good in the one as in the other. However, there are presented many cases, both surgical and nonsurgical, that will go to the specialist, and the reason for this will be explained further on.

Minor surgery will take up more of his time than will general surgery. Scarcely a day passes but that he will be called upon to dress wounds or set broken bones, and he should know how to do this in a proper surgical way.

For many years, for wounds of the hand and face, that is to say, cuts and laceration, tincture of iodine and collodion have constituted my main dressing. I seldom employ bandages for minor wounds of these parts, nor for incised wounds in children. Cotton moistened with collodion will hold parts together for primary union, in the place of ligatures; and, when children get their fingers cut off, as often happens, with an ax, I dress them as I do other wounds and trust to nature for repairs. This gives much better results.

For shock occurring in very great accidents, there is nothing better than morphine with hyoscine. Preseding operation following accidents, when shock is feared and general anesthesia would not be thought safe, spinal anesthesia will be the anesthesia of choice to use for certain regions, as it is both safe and prevents shock. Indeed, I regard it as one of the greatest helps for the country-doctor in operating upon the genitourinary and rectal regions and the lower extremities.

Tumors, both malignant and benign, will demand his attention. Also, a part of his

time can be devoted to corns, bunions, birthmarks, moles, and, in the case of the ladies, to facial blemishes, pimples, and to the wrinkles of the older folk.

The mouth is the most important, the tongue is the great indicator; the teeth, the main masticators, are the most-neglected part of our anatomical makeup, and the country-doctor will be required to give some of his time to the consideration of the diseases that affect these parts. The extraction and cleaning of the teeth, the treatment of the gums and of the many other affections of the mouth can, and should, be part of his daily work.

The nose and throat likewise will need the attention of the country-doctor. Enlarged tonsils will need to be removed. In many cases, they can be removed with the tonsillotome; and, in the great majority of cases, that is all that will be necessary. Still, you will encounter some that will have to be dissected out; which, with the proper equipment, is both easily and safely done. I prefer the snare, as being the safest and most nearly bloodless. Adenoids can be removed at the same time.

Many times he will get patients, more especially children, who have kernels of corn, beans, cottonseeds, maggots, and many other foreign bodies in the nose, and he should be prepared and be equipped for their removal, as ofttimes snuff and pepper will fail to force them out.

The troubles of the ear are, perhaps, less understood by the country-doctor than almost any other branch of the healing art. However, being of one of the special senses, they demand of him at least a working-knowledge of this organ's anatomy and the diseases that will most likely call for his attention. Foreign bodies will have to be removed, and he should be equipped with something more than a hairpin in the way of instruments. A few whiffs of chloroform will aid wonderfully in their removal.

Injuries of the eye, and more particularly of the cornea, will demand prompt and energetic treatment in many cases, if the eye is to be saved. Removal of foreign bodies from the eye will often be required of him, and he should understand and be equipped for this work. I have seen many instances where attempts had been made by unskilled operators, to the detriment both of the patient and operator. Ulcers of the cornea should never be allowed to rupture, for, by proper treatment, this accident can be prevented and an eye saved.

Pterygium should be removed by the country-doctor, as the operation is very simple and without danger.

Emergencies will occur when he will find it necessary to enucleate an eye because of injuries sustained, and this he should be able to do, as the operation is both easy and simple. It should be done under cocaine-anesthesia, he having in mind at all times asepsis of the parts and of the instruments. The first thing with me, after the examination of an eye, is, to make it as aseptic as possible; by using a 10-percent argyrol solution followed by flushing with distilled water.

Obstetrics goes hand in hand with country-doctoring and will cause as many anxious moments as will any other branch of

Dr. Bates and Two of His Neighbors.

the daily work. Properly to instruct and advise a woman for the lying-in period, merits a great deal of study and thought, and the carrying of her through this ordeal safely is a thing greatly to be desired and hoped for. The after-treatment and care both of mother and baby will require the same careful study. There are two kinds of accidents that go with obstetrics, namely, hemorrhage and lacerations. These, one may say, many times are unavoidal accidents. Not being familiar with and having no previous history of uterine myomas and other tumors, portions of retained placenta, and also a natural tendency often gives us an unlooked for hemorrhage.

Many times lacerations will occur, no matter how careful the attendant may be in his management of the case. Immediate repair should invariably be done, as we shall

get better union and results will be more satisfactory.

Gynecology perhaps can boast of more specialists than almost any other branch of medicine. Nearly every general practitioner, when he first hangs out his shingle, will have letterheads and cards with the euphonious inscription: "Diseases of Women and Children a Specialty." The country-doctor that is familiar with the diseases of women, and qualified to treat them, both medically and surgically, need not worry about having something to do, as his patients will do his advertising.

Genitourinary and rectal diseases will furnish a great number for his consideration, and will be of varied character, and, when he becomes familiar with this class of diseases and the work required and is provided with proper equipment, results will be most satisfactory.

The country-doctor should be qualified to treat hemorrhoids, anal fissures, and fistulas. There are available four operations for piles, but, only two need to be mentioned, namely, ligature and clamp. Both are simple and offer best results. I prefer the clamp as the easiest and as giving best results, with a minimum of danger.

Affections of the skin are, perhaps, more puzzling in arriving at a diagnosis than are the diseases of any other class that the country-doctor is most likely to encounter. The lesions occurring upon the skin are of two sorts, primary and secondary. The primary lesions are macules, wheals, papules, tubercles, tumors, vesicles, bullæ, and pustules. Secondary lesions of the skin are such as exist either as a result of primary lesions or from other causes. They are crusts, scales, excoriations, fissures, ulcers, and scars. Unless we are able to place each disease in its proper class, disappointment awaits our efforts at effecting a cure.

Some skin diseases pass through many of these lesions, there being, the papule, vesicle, pustule, crust, ulcers, and scars. After-treatment of some of the most common is, sometimes, very disappointing after their passing from the acute to the chronic stage, in spite of all one's efforts at relief and cure, and we are told that there is one that the rich most envy the poor for, who seem to derive so much pleasure and joyful relief from scratching.

I have tried to present an outline of the country-doctor and what he should do as I understand his position and practice myself. You will find, as a result of recent biological and chemical discoveries and other greatly improved methods, that surgery in all its branches has made wonderful progress, while many other branches of medicine also have suddenly developed, making hospitals and specialist so popular just now that many people actually imagine that the family-physician or the general practitioner, because temporarily obscured, is passing away and is about to follow the dodo and the buffalo.

Friends, believe no such folly; for, on the contrary, the family-physician stands at the chief gates, he, as a rule is the one first consulted; and there is much that can never be taken from him. Although he may just now be temporarily eclipsed, the days of his usefulness are only now beginning; for, the medical and surgical procedures that now require special knowledge and skill must and will inevitably become common property and everyday knowledge and part of his armamentarium, thus giving him more weapons and more power, and thereby giving the hospital-surgeon and the specialist less advantage over him. Thus we shall go on, ever advancing, with the other following, today, tomorrow, next year, without end.

Private hospitals and sanitariums, and the outfits of many country-doctors already show the entering wedge of this diffusion and soon but few patients will have to travel 50-100-500 miles to get standard or special treatment.

It is the business of the country-doctor to keep his eyes open and equip himself with whatever aids his best interests suggest, and to strive to excel in their use.

W. A. Bates.

Purdon, Tex.

ONE WAY TO COLLECT AN OLD ACCOUNT

Brushing the snow from his shoulders and sleeves Doctor Otis stamped into his office as the old cuckoo-clock squawked eleven. After removing his coat and hat, he proceeded methodically to fill his medicine-case and to arrange his call-list for the next day. His actions were quick and certain; no time nor energy wasted on false motions. While so occupied, the annoying ring of the telephone disturbed him.

Sixteen hours of steady work had made him very tired. Would he answer it or not, or let his wife inform the person that he was not in? Again it rang. So, he grabbed the receiver impatiently: "Doctor Otis speaking." . . . "Very sorry, Humphery! I'll be as long getting there as you are paying my bill." . . . "Six months!" He slammed up the receiver and prepared to retire, when the telephone again interrupted him. He answered it as before. "Yes! For thirty-five dollars, cash! The old account and ten for tonight. You provide the transportation." . . . "My terms or nothing doing!" . . . "Very well. I'll be ready when the car arrives."

A half hour later, a limousine from the Boulevard Auto Service called for him. The wind was piling the snow into deep drifts, through which the Doctor waded to the curb and climbed into the car. He settled himself into the seat and was immediately asleep. The gears groaned complainingly while the rear wheels spun around, flapping the chains against the fenders as the machine slowly made its way through the streets. At the Humphery residence, the chauffeur awoke him. The maid, who admitted him to the house, informed him that Mrs. Humphery's condition was "very serious."

"Come right up, doctor," Mr. Humphery called down from the head of the stairs.

The Doctor did not reply, nor did he take off his coat or hat. Thinking that he had not heard, Humphery again called to him.

"Thirty-five dollars to climb those stairs," Doctor Otis called back.

"I'll pay you afterward," bargained Humphery, as he came downstairs.

Doctor Otis turned abruptly toward the door, but, Humphery grabbed his arm and expostulated: "Here is five, and five more when you go."

Doctor Otis accepted and put it in his pocket, then, taking out his callbook, he made an entry. "Five dollars credit on your old account. Six months at 6 percent interest—seventy-five cents," he drawled.

Humphery squinted. "I never pay interest——"

"Nor anything else," interrupted the Doctor.

Humphery hesitated, muttering to himself, then he fumbled over some change and counted out seven dimes and five pennies which he handed to Doctor Otis.

"Umph! Guess your wife isn't seriously ill, else you would not haggle so much. Where's the ten for tonight's call?"

"I'll give you that when——"

Doctor Otis opened the door and went out, but, Humphery quickly followed him. "Doctor! Doctor!" he cried.

"If you waste any more of my time, I'll make it twenty," snapped the Doctor.

"Twenty!" Humphery's teeth chattered, but, not from the cold, "I'll pay ten."

They reentered the hall where Humphery took a roll from the inside pocket of his vest from which he counted off ten one-dollar bills. Then he returned the roll to his pocket, recounted the ten twice and gave them to the Doctor, who was about to demand the rest of the old account; only, his sense of medical duty overcame his business-judgment.

They then proceeded upstairs to where Mrs. Humphery, groaning quietly, was reclining on a lounge. "Oh! doctor, I'm so glad you came. I know I'm terribly injured!" she exclaimed hysterically.

"What happened?" inquired the Doctor.

"She stubbed her toe and fell on the sidewalk in front of Garrit's store," Humphery explained.

It required the united coaxing and combined efforts of the Doctor, her husband, and the maid to remove the shoe and stocking from Mrs. Humphery's injured foot, for, any attempt to touch it was the signal for an ether-splitting outburst of screaming and wailing, which the apparent seriousness of the condition did not seem to warrant. The Doctor took a pair of bandage-shears from his bag and informed Mrs. Humphery that it would be necessary to cut the shoe and stocking, if otherwise she could not bear the pain. To have spoiled that new shoe and silk stocking would have been criminal, and his patient "believed" that she would be able to endure the ordeal without having those items of wearing-apparel destroyed.

This eventually having been accomplished, the Doctor carefully examined the foot by alternately rotating it from side to side, then bending it backward and forward, this being accompanied by the most agonizing shrieks from the woman. No swelling, nor black-and-blue spot, nor evi-

dence of displaced or broken bone could he discover.

"For the night, just keep the foot and ankle wrapped in cloths wrung out of hot water," ordered Doctor Otis as he turned to leave the room.

"Are you going to put on a plaster-paris cast in the morning?" Humphery queried anxiously.

"No. It is not broken."

"Well, it is badly sprained, isn't it?" Humphery was more worried than before.

"No. There is no serious injury. Slightly wrenched, if anything. It'll be all right by morning."

"Confound it! I pay five, ten, fifteen dollars, and seventy-five cents and transportation, to learn that she isn't hurt, but, I'll sue Garrit just the same," growled Humphery, pacing the room.

Doctor Otis ignored the remark and, after repeating his directions, quietly departed.

The next morning Doctor Otis' humor was not of the best as he glanced over his mail. It brought a letter requesting him to give an address before the Kilo Club on some phase of economics, on the following Saturday evening.

"Phist! The Kilo Club, and economics! That club has just one too many members," he grunted, tossing the letter into the waste-basket.

While making his daily calls, he stopped at The Alton R. Humphery Company's offices. Ignoring an officious clerk presenting, he strode across the main office to the private one. Not being a slave to tradition and convention, he forgot to knock and entered unannounced. Humphery looked up angrily at the intrusion and demanded, "How did you get in?"

"Look here, Humphery, what are your business methods? Two percent discount for cash in ten days, net on thirty or sixty days' credit? Sight-draft in ninety days, and sue in four months?"

Humphery's face was scarlet, "Yes, by thunder! What of it?" he roared, striking the desk with his fist.

"You've owed me twenty-five dollars for six months and ignored every statement. You would neither have sent for me nor have paid me last night, if you could have gotten any other physician."

"Oh, that's it," sneered Humphery. "Doctors are a joke when it comes to business. I never paid one before. Collect the balance, if you can!"

The Doctor's face broadened into something that resembled a sardonic grin. "Very well," he smiled and left.

As usual on Saturday evenings, all of the tables in the billiard-room of The Kilo Club were occupied. Doctor Otis was playing with a friend, while Humphrey wandered from one table to another, watching the players. Although a boy had announced that the president was about to call the meeting to order in the reception-room, yet, the members leisurely finished their games before they straggled in. Humphery took a seat by himself in the rear of the room. As Doctor Otis entered, he whispered to a bellboy and slipped something into his hand, then the door closed quietly.

"The speaker of the evening needs no introduction," said the president. "Our esteemed medical member, Dr. Calvin R. Otis, will now address us on some phase of economics."

"Mr. President and Fellow members, there is no such a thing as an uncollectable account," Doctor Otis began abruptly. "There is a way to collect every account, but, it is up to the creditor to find the way in refractory cases. Dun! Dun by every conceivable method; by mail, by telephone, by collection-agencies, and by lawyers. Sue! Get execution of judgments. Get notes with or without security. Dun your debtor anywhere and everywhere you meet him. On the street, at church, in the bar or grill, at the club. The man who refuses to pay is unworthy of courtesy.

"For example, if you have a debtor, who refuses to pay your bill against him, by ignoring all statements, if such debtor has a big business and a bigger income, but, everything is in his wife's name, if he goes to dinner-parties and joy-rides, and is a member of your club, that man deserves to be exposed."

Humphery stepped quickly to the door—the door was locked!

"Mr. Humphery will now open the discussion," said the speaker.

A merciless laughter filled the room as the members showed their enjoyment of Humphery's discomfiture, who swore as he glared at Doctor Otis: "No gentleman would use your method. Collect it, if you

can," and he started for the door at the other end of the room, but, the Doctor met him on the way.

"I know that you are so poor that you can not afford to pay what you owe me. I'll make you a present of a receipted bill and use my influence with the Commissioner of Charities to secure an order for groceries or a place in the almshouse for you."

"By thunder! I'm no pauper," stormed Humphery, as he pulled out a roll of bills and peeled off four five-dollar notes, which, after the manner of a man who has taken the last and deciding trick in a close game of pinocle, he slammed on the table. "There's your damned twenty dollars," and he strode from the room.

At the next meeting, The Kilo Club accepted Humphery's resignation.

EDDY S. HASWELL.

Albany. N. Y.

A NONSURGICAL TREATMENT FOR BONE DISEASE.

A young medical student, hopeless and in despair, wandered along the heaths of old England. The beautiful sunshine and twittering birds were unheeded, Surgeons, who were his professors, had repeatedly operated upon his shoulder-blade and ribs, without success. A vicious, virulent osteomyelitis, an infection of the bone into its very marrow, was unchecked. He was doomed, apparently, to follow his two athletic brothers. Both had succumbed, victims of tuberculosis. As he strolled along the country wayside, the rolling green suddenly gave way before his progress to a huge tannery. Half idly, weak, and worn by his exertion, the embryo medical man—watched curiously a strange frothy, emulsion-like bubbling upon the hides that were soon to become leather.

"What is that?" he asked the tanner.

"That is a method to rid all impurities from the cows' hide," was the reply.

"Does it enter the crevices, cuts, wounds, and open places of the animals' skin?"

"Yes. This watery solution is applied to the skin and it removes all decay, decomposition, and putrification. It not only helps to preserve the skin, but, it makes the hide softer and more vigorous."

"Well, if it does that to cattle and hides, and I'm doomed to die, anyway, will you sell me a gallon, to try on my own sores and wounds?"

The tanner laughed and consented, adding, "It has never been used on man either as a medicine or a poison."

Young Pridham sedulously soaked the stuff on his running sores until it burned him to the bone. But, in six months he was well, set sail for America, and entered the employ of the Westinghouse Electric Company, where for ten years he gave himself up to mechanical employment. He had forgotten all about his student days, his bone-tuberculosis, and all else—only thought of making a living.

One day, in swimming with Prof. N. M. LaPorte, engineer and inventor, and graduate of Purdue University, the healed scars attracted the Professor's attention. Pridham told him all about it. Professor La Porte became interested enough to send Pridham back to England, to ship him a barrel of that mineral solution. When it arrived, it was analyzed and discovered to be a solution of a mineral oxide unused by medical chemists and unfamiliar to physicians or pharmacists.

Professor La Porte thereupon began a series of investigations, trials, and experiments, which have extended over the past ten years, with a personal outlay on his part of upwards of thirty thousand dollars. In this period without pay, he has treated and healed more than seventy-five children and grownups afflicted with infections of the bones, which surgeons and others had given over to him after amputations and repeated operations had failed to limit or check the inroads of bone-tuberculosis and its allied invaders. A man of wealth and of great humanitarian principles, Professor La Porte has established a sanatorium devoted exclusively to the treatment of bone diseases by this new method. The Cincinnati Hospital and other institutions also expect to use this method soon.

In plain terms, this simple, inorganic mineral, never before used in medicine or surgery, is a harmless, nonpoisonous oxide similar to rust, which is an oxide of lime, that is, oxide of calcium. After the correct dose for the particular kind of bone disease is determined, it is applied, dissolved in water, under a rubber sheet, to keep the parts moist. Immediately a bubbling emulsion of tissue waste and disease-germs gives evidence of the oxidizing ac-

tivity of the poultice. Microbes and bacteria, the bacilli of tuberculosis or of septicemia are literally destroyed and driven out of their hidden nests.

The mineral solution is really a modern antiseptic poultice, cleansing and disinfecting, exploratory and healing, instead of dirty and temporary, such as the ancient uncertain flaxseed poultice. It acts by oxidizing—burning away—all impaired and diseased tissues, while it simultaneously stirs the healthy fabric to germinate and heal from the innermost recesses.

The method consists, briefly, in destroying the germ of the disease by oxidation, the oxygen for which is generated from the external application of a poultice-like mass containing chemicals that release oxygen by possibly "osmotic action," which penetrates even an unbroken skin. The effect of this method of treatment is, to bring the germs to the surface, where they are destroyed, and also to facilitate the entrance of the germicidal agent to the affected parts by scraping, chiseling and curetting and subsequently packing the cavity thus created with an antiseptic paste or gauze.

Surgery rarely cures the disease, largely because it deals with the effect of the disease and does not effectually reach or eliminate the cause; and it has been repeatedly found that, extending to a considerable distance around the affected parts, are a number of sinuses or channels containing active noxious germs.

As soon as the antiseptic properties of the packing become active, resulting in a recurrence of the disease, necessitating further operation, each subsequent operation involves further loss of bone, until amputation is finally necessary. Many times amputation becomes imperative, to prevent the infection spreading and causing general septicemia.

Such a remarkable record has demonstrated beyond all doubt this method of curing a class of what had heretofore been regarded as incurable diseases.

L. K. HIRSCHBERG.

Baltimore, Md.

OPPORTUNITY

THEY do me wrong who say I come no more
When once I knock and fail to find you in;
For, every day I stand outside your door
And bid you wake, and rise to fight and win.

Wail not for precious chances passed away,
Weep not for golden ages on the wane.
Each night I burn the records of the day;
At sunrise every soul is born again.

Laugh like a boy at splendors that have sped,
To vanished joys be blind and deaf and dumb;
My judgments seal the dead past with its dead,
But never bind a moment yet to come.

Though deep in mire, wring not your hands and weep;
I lend my arm to all who say, "I can."
No shamefaced outcast ever sank so deep
But yet might rise again and be a man.

Dost thou behold thy lost youth all aghast?
Dost reel from righteous retribution's blow?
Then turn from blotted archives of the past
And find the future's pages white as snow.

Art thou a mourner? Rouse thee from thy spell;
Art thou a sinner? Sins may be forgiven;
Each morning gives thee wings to flee from hell;
Each night a star to guide thy feet to Heaven.

Walter Malone.

After the World War

LETTERS FROM FRANCE—VI*

M. Clemenceau, France's ironhearted premier, has publicly and without solicitation placed the stamp of his official approval upon the work of the Y. M. C. A. overseas. In the course of a recent celebration, in Saint-Mihiel, for the purpose of commemorating the occupation of that town by the Allied troops after four years under German rule, the "grand old man of France" singled out F. G. Randall and H. C. Culbertson, president of Ripon College, Ripon, Wisconsin, from among the cheering crowd that had assembled in front of the city hall and left a procession that he headed, to praise to them the Red Triangle.

M. Clemenceau shook hands with the two Y. M. C. A. workers and said to them with great earnestness: "We greatly appreciate the work you are doing. Our hearts are full of gratitude; our hearts are with you."

—

Miss Florence Bullard, American Red Cross nurse, has received a glowing citation for her work in France, this carrying with it the right to wear the Croix de Guerre with bronze star. The citation reads:

"Miss Bullard is a nurse whose efficiency, devotion, and bravery have won general admiration. Ordered to Soissons at the beginning of 1918, she showed the most imperturbable sang-froid under the entire violent bombardments of March and May, searching, in spite of the danger, for the wounded to assist and comfort them. During the operations of July 15 and August 5, she showed the same spirit, devoting all her strength to the care of wounded. Her attitude was especially brilliant during the night of July 31, when bombs burst quite near the outpost."

Miss Bullard is a graduate of St. Mary's Hospital, Rochester, Minnesota. Her home address is Glens Falls, New York. Accompanying the citation, is a letter to the Paris Red Cross Headquarters, from a commander in the French Army, under whom Miss Bullard served, which reads:

"I take the greatest pleasure in handing you the splendid and well-deserved citation of Miss Bullard, American Red Cross nurse at Evacuation Hospital 13. I beg you to accept the most sincere congratulations of all the doctors in the hospital on the untiring devotion Miss Bullard and her American colleagues, Miss Heath and Miss Ross, have shown to our French sick and wounded men. The noble character of these nurses, the unassuming and touching manner in which they cared for our soldiers deserve at once respectful admiration and our friendly gratitude."

—

The outstanding feature in the August report of the Red Cross activities is, the great increase in the service for the troops. The canteens have done an enormous amount of work in serving 860,000 men. One canteen alone served 129,000 hot drinks. Doughnuts, sandwiches, and more substantial foods are served with coffee and chocolate.

The metropolitan canteens served more than 330,000 French and American soldiers, during the month, and 44 posts in the army field since distributed 515,000 hot drinks as well as other comforts.

Another great increase is to be noted in the home and hospital work, as more than 10,000 letters have been received and answered regarding missing men and details wanted either by relatives at home or by men here. The number of hospital-recreation-huts has been increased by seven, thus making a total of seventeen.

In the field civilian relief-work, the Red Cross is now operating 72 dispensaries in big cities or in the villages that are without doctors, near the front. These dispensaries and hospitals treated, during August, 34,250 patients, 25,00 being children.

—

The educational exhibits designed to combat infant mortality and tuberculosis

*It should be remembered, on reading this interesting letter, that it was written in wartime, before the signing of the armistice.—Ed.

have been attended, within the month, by 380,000 people.

—

Workers of the Red Cross garage in the American zone, in a series of thrilling night expeditions close to the front have been rescuing furniture and household goods abandoned in the hurried evacuation of last spring.

The refugees from these towns, unable to get together enough new goods to live decently, appealed to the "Prefect" for permission to recover their property. The permission was granted, on condition that transportation could be found, so, the Red Cross, through its drivers, who voluntarily assumed this task in addition to their regular work, offered the use of several camions.

The rescue of beds, linen-chests, and old wardrobes is much more exciting than it sounds. Many of the evacuated villages lie at the mercy of the German guns, and the town where most of the work has been done, a once thriving city of 15,000 inhabitants, is only 1,200 meters from the lines.

Every one of its houses has suffered from shellfire; is exposed to attack by artillery, by gas, and from the air, and, by army-order, no camions are permitted to enter any house, except under cover of night. The bridge that spans the Moselle River, being in full view of the German trenches, cannot be crossed by camion and, so, the little fleet of Red Cross trucks had to divide forces at a bridge several kilometers downstream and enter the town from both sides. What took place when they arrived at the town, one of the drivers, a New Englander, describes as an "evacuation-bee".

Every one pitched in and helped. The men from the other cars ran across the bridge on foot, hugging the shelter of the parapet, and several French civilians, who had been allowed back to help pack up, joined us. The German shells were screaming overhead, but, we could not make a noise or smoke a cigarette, for fear of drawing their fire.

One night, they did run into a bunch of gas and had to work with their masks on, and dark—you could not see your hand before your face, except when they sent a star-shell up from the lines, and then you could see to read. When they sent up red ones, it looked as if the whole town were on fire. There is not much left upon the place, anyhow, but, they pulled camion-load after camion-load of good stuff out of the wreckage, and the gratitude of those poor people was immense.

When the trucks were loaded, they took the goods down to a railway station several kilometers away. There, the furniture and other rescued materials were put on cars and taken to a point where they could be claimed by their owners. The work in this particular town having now been completed, the Red Cross camions are at work on the same errand in smaller villages comparatively far from the front.

—

Influenza, the grip, or "Spanish flu" again had the honors of discussion at the Academy of Medicine on Tuesday.

In view of the extension of the present epidemic of influenza over the greater part of France—a progress which it is dangerous to dissimulate and absurd to exaggerate—the government requested the Academy to appoint a special committee to take measures against the malady, which is largely responsible for the increased number of funeral-processions observed every day in the streets of Paris as well as in the suburbs.

The Academy has appointed on this committee such eminent medical authorities as Doctors Chauffard, Achard, Vincent, Netter, and Bezancon, men whose reputation is international and who are better qualified than any other scientists in the world to fight the insidious scourge that is now rampant in nearly every quarter of Paris.

During the meeting, the Academy considered a communication, presented by Doctor Achard, on the presence of bronchopulmonary spirochetosis in the present epidemic. Another communication, one from Doctor Patein, dealt with the chemical analyses of blood and other fluids from victims of grip. These analyses revealed the presence of surprising amounts of urea. This is regarded as evidence of denutrition, or of a kind of intense autocombustion, of which other symptoms are the patients' very high temperature and the rapidity with which they become emaciated. With regard to this rapid emaciation, some authorities advise the superalimentation of the sufferers, notwithstanding their feverish condition.

Doctor Netter, who has made a special study of influenza ever since the terrible

epidemic of 1889-1890, when people perished by thousands, stated yesterday that, when the present form of influenza first appeared last spring, it manifested no particularly grave characteristics. An attack generally lasted only a few days, the chief symptoms being intense pain in the head and limbs and a feverish temperature. Since last August, however, numerous complications of a virulent nature have developed, including acute bronchitis, suffocation, catarrh, pneumonia, and pleurisy.

The present epidemic is particularly contagious. It attacks members of the same family, while the persons nursing the patients are extremely liable to be stricken.

The treatment varies according to individual cases and can be determined only by the physician attending a given patient. When an attack of influenza occurs, the victim should remain indoors and send for the doctor immediately.

—

In the tremendous amount of construction that has been carried out for the American Army within the last year, there is nothing so wonderfully interesting as the huge salvage-plant near Tours. No army in the world has anything like it, and not a day passes that representatives from some of the Allied Governments do not inspect it and take notes upon its method of operation. It has saved, not thousands, but, millions of dollars for the United States Government. It has been described, in a general way, several times in *The Herald,* but, it is constantly increasing its work, so that new details are worth mentioning.

Not a scrap of anything is wasted. Beautiful hospital-slippers are made from old campaign-hats that have been discarded. The question has often been asked as to what became of these hats. They are of a splendid quality of felt, and no matter how old and worn they are, the felt is utilized in the soles of the slippers. The uppers are made from old woolen garments thrown aside as absolutely beyond repair.

The overseas caps are another specialty made from old uniforms unfit for repair, and brassards are manufactured by the thousands for the various army services. Old garments are dyed green and marked "P. W.", to be used for the German prisoners of war. The old trench-shoes that have been mended and are beyond more repairing, are cut up into shoestrings. No matter how worn the shoes may be, there always is a piece of leather left in the uppers big enough to make several pairs of shoestrings from.

The shoe-department is one of the most important. Shoes and boots are brought in by thousands of pairs. They first are washed and disinfected and sorted and then given out to be repaired, greased, inspected, and again packed for shipment. The production in this branch is about 3,500 pairs per day. The total value of the output for the month of August was $449,599. About 80 percent of all shoes received are repaired. New machinery is constantly being added to this department, and when it is completely organized it is expected that 7,000 pairs of shoes will be turned out daily. At present, this branch employs 2 officers, 7 noncommissioned officers, 114 enlisted men, and 280 male and 249 female civilians.

The depot has seven operating-departments: Laundry, clothing, shoes, rubber goods, harness and leather equipment, canvas, and webbing and metals. The laundry alone employs 206 workers, over half of whom are civilians. All sorts of new devices in machinery to save hand-labor for washing, rinsing, and drying are used, and more than 75,000 pieces are turned out a day.

That of clothing is probably the most important department. Its production is limited almost entirely to breeches and blouses, underwear, bedsacks, and blankets. The daily output is 10,000 woolen breeches or blouses, 25,000 garments of underwear or bed-sacks, and 500 blankets.

After coming from the laundry, the garments are examined and marked for repair or, if not reparable, they are cut up for patches. The patches necessary for the reparable garments are cut entirely from the unreparable ones (15 percent of the total) and then sent out to the various branches for the actual sewing, after which they are classified either for reissue to the troops or labor battalions. About 1,600 women are employed in this branch, and 75 men. The value of the production for the month of August was £2,040,831, more than $10,000,000, while the operating-costs were $93,432.

The rubber-goods branch also shows remarkable figures for saving. It handles, primarily, rubber boots and "arctics",

Copyright, Comm. on Publ. Information.
First Aid at the Firing-Front.

"slickers", ponchers, and shelter-halves. It produces about 3,000 garments and 850 pairs of boots a day. The great feature of the department is, the new vulcanizing-machine recently put into operation and which has proved most effective in the method of patching. Its personnel numbers 341, principally women.

The harness-department repairs all the old pieces of harness brought in from the battlefields. Then, after being sorted out, the French harness is returned to the French army and the British harness to the British army. The chief items are complete sets of harness, of which about 1,000 are turned out weekly, and saddles, of which about 700 are turned out weekly. About 150 women and 50 men are employed in this work, and the value of the monthly production amounts to $315,453.

The canvas-department handles leggings, haversacks, canteen-covers, cartridge-belts, medical packs, waist-belts and other small equipment-articles. It turns out, daily, 5,000 canvas articles and about one carload of burlap sacks. Its production in a month totals about $22,878 in value.

The total value of production for the month of August was over three million dollars ($3,246,588), while the cost of production was $315,013; the percentage as compared with the value of the output was 10 1-4 percent.

The actual salvaging-operations of the depots started last January with 5 officers, 6 enlisted men, and 6 civilian employees, while at present about 10,000 persons are employed. The results show that the depot not only is saving a large volume of transport, but, 100 thousand dollars a day, and the officers in charge say that they expect to double the work.

B. Sherwood-Dunn.

Paris, France.

Just Among Friends

A DEPARTMENT OF GOOD MEDICINE AND GOOD CHEER FOR THE WAYFARING DOCTOR

Conducted by GEORGE F. BUTLER, A. M., M. D.

Society and Solitude

LET me venture to offer for the reader's consideration a few suggestions upon society and solitude, in the form of notes by the way, hazarding the promise that in proportion to our interest in life itself will the study of the theme engage our best thoughts and reflections.

What is society? Wherein lies the subtle charm that binds us to our fellow creatures in the world at large, permeates with its vitality and hope the body politic of our republic, links us indissolubly with the remotest nations of the earth, and, blended with the divine instinct of human affection, renders forever sacred the associations and memories embalmed in the idea of home? Shall we degrade its name and import, limiting its sphere to the private theatricals of a drawingroom; to a multitude of dainty nothings, uttered only, to tickle the ear and leave us poorer than ever? To a brooch, a glove, the latest genteel gossip, the conversation at an afternoon bridge-whist party—the dryrot of social intercourse? Of such inanity, one is reminded in its first interview, as created by George Elliot, between Grandcourt and Gwendolen, and the author's caustic remark, "Then commenced what is called conversation." No, to a nobler category of thoughts and feelings, to a higher plane of action, must we assign, in its finest sense, society.

In its purity, society is the embodiment of that inward longing of the heart which calls us from our lonely hearthstones to seek communion with the outer world; to test our theories of life and, through the medium of brave sympathies and the advantage of a deeper acquaintance with the excellence and the follies of mankind, see revealed to ourselves our own virtues and shortcomings. Upon the very threshold of society, we should assume a modest confidence, accepting as final the lessons of experience, however closely they may be brought home to us. Doubtless there are few occasions more mortifying than the sudden discovery in the presence of superior intellect and force that we have overestimated our worth. Everyone guards within a retired niche of his heart's chapel the pleasing assurance that he is not wholly unimportant as a factor of mankind, and the revelation that our pet theories and deductions, drawn from what we fancied had been a careful study of our fellowmen, are, after all, erroneous, is little calculated to awaken in an ordinary mind better feelings than those of disappointment and regret.

The chagrin arises mainly from the fact that we have been worshipping false idols in attaching undue importance to private doctrines. It is this morbid self-consciousness, this want of humility in our desires consequent thereupon that obtrudes at every step our own selfish personality, that gives to society, in most circles, the aspect, not of a generous conflict between inspired men and women, but, of a paltry skirmish wherein each individual hides behind a shield of triple defense the foibles that must not, on any account, be disclosed to the enemy.

Yet, the instincts of human nature are keener than our strategy, and, in the long run, every man finds the level to which his faculties elevate or degrade him. Let us, however, but stand bravely in the presence of others, with the beam of sincerity in our eyes and the message of truth upon our lips, seeking only to know and to be known, filled with the genial warmth of love and charity, and instantly society acquires a new character and more stately proportions. We no longer are conscious actors in a petty drama, a conventional farce; the faces and actions of those around us become ennobled and the air we breathe is transfused with kindliness and grace. Persons whom in our exclusiveness or haste we have wrongly classified, according to our narrow standard of human excellence, develop richer forms

and qualities and we are confounded with our own stupidity.

A distinguished American writer tells us of an English visitor who complained to him that in his rural village at home there was really nothing of interest, no one remarkable for intellect or power, and he adds thoughtfully that the very man he had sought with such ardor was, probably, living next door to him. In an unpretending country town, I have often watched the face of a certain railway official and marked in his conduct the strange want of delicacy, the ignorance of manners—alas, not infrequent in American characters!

I once was indignant with him, seeing a grayhaired man publicly shamed, by his rudeness, for a pardonable oversight in the purchase of his ticket, thinking to myself: "Well, this man is honest and perhaps, uncouth as he appears, he serves his part in the economy of his race, though of such can not be the "kingdom of heaven." A few days afterward, I saw from the morning train bound for a distant city a handkerchief fluttering and, in answer to its greeting, an aged mother watching intently the receding figure of her son, and I found upon examination that each day this act of parting veneration was renewed. In a moment, the boor became a hero. Here were poetry, feeling, filial affection, that should lighten during an anxious day the yearning solicitude of that mother's thought. And, from another window, I have often seen a hand grimy in the exercise of a terrible profession waving a bunch of engine waste to the wife and child who stood awaiting the godspeed. Are not such examples a rebuke to us? And, are we not led by them to this conviction, to me the crowning lesson of society, that we are oftener deceived in our evil than in our good opinions of others?

Again, I might tell you of a certain man, now bowed with years, who at the age of twenty wrestled with one of the most frightful forms of mortal temptation, and for upward of half a century this poor shoemaker has heard the voices of ministering angels proclaiming his triumph, till his gray hairs seem like an aureole about his venerable head. And all of us have witnessed these instances of dignity and merit in those whose outward appearance and circumstances offered little interest to a careless observer of men and manners. They teach us that virtue resides in humble places as well as in the minds of the exalted, appealing to us to forego our shallow judgments of mankind, to look deeper into the heart of society, and gather strength, and confidence in each other, from the undying gleams of truth and honor that illumine the obscurest paths. Nay, more, we are led by the contemplation of society, in its amplest sense and import, to recognize that it is synonymous with humanity: for, it is not in the conversation, however admirable; it is not in the wit, the elegance, the taste, the witchery of the dance, the wooing whispers of music and art: not in these lie the charm, the secret fascination which draw a contemplative spirit to seek comfort in the company of others. It is in the universal instinct of humanity, the uplifting consciousness of mortal brotherhood, like that which inspires the verse of Terrence: "I am a man from nothing that is human alienate."

So firmly rooted in our nature lies this beneficent principle of mutual dependence, that hermitage seems impossible to a healthy, vigorous intellect. Notwithstanding a hundred disenchantments, we return, like prodigals, from the wastes of bitterness and isolation to the old faces, the familiar haunts that have before shed lethe upon our troubled lives. Even the venom we have nurtured, when betrayal darkened for us the lovely vistas of the soul's hope and faith, is changed to healing balsam by the renewal of a friendly smile or the touchstone of confiding assurance. We are shocked that we could have regarded with indifference the wealth of goodness, of purity, of love that encompassed our little measure of life, and we turn with firmer vows of fidelity to the warm sympathies that only await our behest to be called into generous activity.

Yet, the forces which pervade the living world about us come to us often unbidden and, through secret avenues amid whose green arches dwell silence and forgiveness, become our protecting nemesis. Let a man be never so broken on the wheel of fortune; let the anguish of the heart's bereavement sweep over and subdue him and the sunlight wound and the carols of birds awaken in his imagination only that deathlike sense of *unreality* that

is the soul's most poignant pain—the touch of a child's soft palm laid joyously and confidingly in his own, the notes of a cherished song falling upon the stillness of his wo like an unearthly greeting, or the innocent laughter of one whose days should know no sorrow will quicken in his being the springs of gentler feeling and elevate his weary consciousness into a serener, nobler atmosphere. So long has he toiled to gather his poor bundle of faggots, and, lo! at the fireside of mankind, he may sit and partake of the most bountiful of human cheer. Unhappy is he to whom such tokens of divine compassion bring no peace, who can not joyfully respond to the unseen visitants of earth or own the blessed thrill that wakens with the pressure of a friendly hand! To such a one, indeed, all is mockery and ruin, society "stale and unprofitable", and the grandest energies of mortals only the fever of pitiless unrest.

Perhaps no benefit to be derived from social intercourse, considered in its amplitude as I have indicated it, is comparable to the abiding trust in human nature developed by an intelligent survey of the motives and passions that sway mankind. As our insight becomes deepened by experience and wise interpretation, we learn to comprehend more justly the finer play of feeling of which all classes of men and women are capable, should the magic sesame ever fling wide the doors of higher emotion in them. As an instance of this latent virtue (too stilled), here is an episode in a conventional drama I witnessed played some time ago.

I refer to the play "Fairfax," in which the heroine is doomed to suffer what Mr. Mill, in his "Subjection of Women," calls "the sad irony of life," being wedded to a brutal husband whose passions, long since estranged from their natural object, have plunged him into an abyss of degradation and shame. Even the thought of his dying child can not rouse him from the torpor of his moral obliquity, and in a moment of fiendish wrath he attempts to wrest from his pleading wife by force the means of her support and of the child's salvation which chance has brought to her. In the struggle which ensues, the weapon which he directs against her is, through the benignant resources of modern melodrama, accidentally turned against himself, and its discharge terminates his besotted life. Filled with dismay, the wife flees southward, appearing, in the following act, under an assumed name, as governess in a wealthy family residing on an impossible estate situated on the banks of the St. John's River of Florida. Here, the heir apparent falls madly in love with her and she is sorely pressed to conceal her identity, which poverty and still more a genuine affection for her suitor persuade her to attempt. A stranger appears, who, being well acquainted with her previous history, including the fatal encounter with her husband, hastens to warn her of the duplicity of her position toward his friend her lover; and finally a still further disclosure reveals the secret she struggled to hide—less from motives of policy than from the overmastering passion which has assumed control of her womanly nature. Then follow the bitter reproaches of her betrothed and the misery of finding herself discarded by the friends of yesterday, who lose no occasion to augment the intensity of her grief by the most heartless contumely and scorn. Distracted by conflicting emotions, the poor woman sinks under a weight of private agony. Finally, having recovered her self-possession, she determines to address a letter to her lover, containing a full confession of the catastrophe which has blighted her fondest hope. The whole scene, by the way, has been admirably treated, the situations being highly dramatic and replete with unaffected power and simplicity. And now comes the moment to which these necessary details have conducted us.

With averted face, the woman offers him the declaration which is to free her character from the stain that fate has cast upon it, while the circumstances therein related, she well knows, may only serve to confirm the suspicion of her crime. Taking the paper from her hand, the man simply asks in a voice of mingled sternness and affection whether it includes any record of guilt, and this her consciousness of innocence prompts her to deny unequivocally. As he turns from her, all his doubts are merged in manly magnanimity and trust, and the climax of his faith is reached when he silently holds the unread confession in the flame of a taper and calmly watches the burning of the confession that has so humiliated her.

Instantly a tempest of applause burst from the house. One almost could feel the pulse of the delighted audience as it re-

sponded to that irresistible transport. But, most interesting to me and that which bears more directly upon our subject was the fact that the first outburst of approval came from the gallery: not from the jeweled palms of luxury and pride, but, from the stenographers, the clerks, the shopgirls, the servants, the newsboys, and the sad company of those to whom life has much of tragedy and shame. That single noble impulse in them bespoke the universality of the affections, the instinctive recognition of honor and truth that will never fade while human hearts endure. It was the one touch of nature that makes the whole world kin, which, to him who cherishes true reverence for mankind, is more eloquent than the drama itself and makes society possible even among the humblest and poorest of us all.

From these instances, we deduce the reflection that our opinions of others are only relative, being subject, always, to the degree of insight which education and knowledge of the world confer. It is never safe to predicate of fellow men what they are or may be; at most, we may utter the impressions we receive from their language and address, assuming that there is yet a possibility of something greater than we recognize in them, to which they would rise should occasion call for its display. The heroes of all ages, the inspiration of all transcendent epochs in the world's history and the uncomplaining martyrdom of daily life that commands our admiration wherever we turn to examine the elements of society attest this supreme fact. To weigh humanity with the justice of a Portia, to put yourself in his or her place, to consider no man or woman too mean for sympathy and care, these are the dictates of wisdom in dealing with the world.

I remember well the pleasing surprise I felt one night in a "cow-camp" in old Indian Territory, listening to a cowboy chanting this sweet song:

Think of all the affectionate fidelity with which Livingstone's savage Makololos clung to him in those African wilds, when from commiseration for their condition he would go forward alone! Alfred Wallace, in "Natural Selection," relates of the Santals of upper Tartary, that they traveled three hundred miles on foot to pay a debt of honor to the British rajahs, though the obligation could never have been enforced; and we learn of a race inhabiting Ceylon among whom falsehood is absolutely unknown. These examples might easily be multiplied, as the best books of travel evince. They are but illustrations of a central truth, namely, that conversance with society in its relations to humanity is to be regarded an inestimable privilege in its tendency to inculcate faith in our fellow men.

I think we should look with delight upon the glad faces of children, mindful of the soul's promise in them; the vicissitudes of maturity are but the reflection of our own griefs and pleasure; and he who reverences not age from instructive veneration for experience has learned little of the solemnity and grandeur of life.

Limiting the scope of our subject to its more immediate significance, it is to be regretted that so frequent an obstacle to the simple relations upon which all healthful society is based is found in our hopeless longing to be understood. This jostling with agreeable company, those multitudinous acts of conventional courtesy, the talent and imagination, the coquetry and grace, which are, as it were, the peace-offerings, the milk and honey with which social enjoyment entices us, are, yet, unsavory compared with the priceless boon of being taken at our best, be it only by one kindred heart among mortals.

Philosophy whispers to us the comforting assurance that to be great is to be misunderstood, that all the wisest and noblest in all times have been falsely estimated by their own age. But, bringing the maxim down to our own quiet circle, we are distressed by the discovery that the converse of it is very far from true and that to be misunderstood seldom means to be great. The foundation of this familiar disappointment doubtless would upon analysis, be seen to rest upon human vanity. It is the ghost of that hydra-headed self-consciousness, that morbid, decrepit introspection which afflicts the thought the manners and literature of our century.

(To be continued)

Among the Books

JACOBY: "UNSOUND MIND AND LAW"

The Unsound Mind and the Law, a Presentation of Forensic Psychiatry. By George W. Jacoby, M. D. New York: Funk & Wagnalls Company. 1918. Price $3.00.

At variance with the custom of centuries, dealing with insane persons should be primarily not a legal but a medical problem. This is so because the insane are not normal people to whom the law can apply without suitable adaptation. It is true that legal restraint is necessary in the case of insane persons since these are prone to commit acts usually involuntarily or, at any rate, without deliberate premeditation, that endanger the wellbeing and even the life of their fellow-beings. However, legal restraint in such case is neither curative nor preventive. It is merely an ancillary means for the application of remedies undertaken either for the restoration of mental health or for the purpose of preventing the incurably insane from injuring themselves or others. This should be recognized by those in charge of the mentally unsound.

The author of the book before us calls attention to the disproportion between the more recent advances in psychiatric medicine and the conservatism or stagnation that exist in English and American laws in the same field. The author claims justly that the science of medicine must constitute a logical basis for every treatise on juristic psychiatry, for, the medical facts alone are stable, even if their scientific recognition may be uncertain and may vary with the lapse of time. Legislation, however, always is subject, necessarily, to relatively arbitrary and, often, illogical changes. In the nature of things, it should adapt itself to the science of medicine, a contrary procedure being ill-advised and productive of serious results.

"That psychoses do not differ from other diseases, that they are usually conjoined with states of bodily disorder, and, consequently, that insane-asylums are nothing other than hospitals adapted to the special requirements of patients suffering from diseases of the brain and nervous system, constitute fundamental truths which must become part of every person's knowledge. Not until these truths are generally recognized will the final prejudice disappear against those who are mentally disturbed and against the asylums for the insane; and only then will the relationship between jurisprudence and psychiatry be of a more intimate and harmonius nature." (From the Preface.)

For these reasons, neurologists and psychiatrists and, indeed, all medical men, owe it to themselves and to humanity to correct and counteract the erroneous conceptions still existing concerning mental disorders and to bring about a just understanding of these affections as the only means by which a proper estimation of the medicolegal problems affecting the insane may be arrived at. This, the author declares, was his chief incentive in writing his treatise.

In the first main division of the book, the general relation is dealt with that jurisprudence bears to psychiatry, considering more especially (in addition to simulation and dissimulation and the self-accusations of the insane) the various degrees of responsibility and the significance they bear to civil and criminal procedures. The second main division is devoted to psychiatric expertism and describes the manifestations by means of which the most important psychoses and neuro-psychoses may be recognized. The third part is devoted to a consideration of hypnosis and anomalies of sexual sense, while the fourth and last part indicates the manner in which written or verbal expert opinions are to be formed or rendered.

It was manifestly impossible for the author to write a book on these subjects that might be easy to read; indeed, it requires careful and detailed study since the problems involved are difficult to say the least. The outstanding claim of the author which

should be accorded general recognition and for which every physician should raise his voice and contend as much as possible, is the accepted view among modern physicians that the insane should be regarded in the same way as persons who are physically sick; except that in the one instance, the lungs, kidneys, stomach, heart, etc., are implicated, while in the other it is the brain and nervous system that are particularly affected.

Doctor Jacoby's book deserves to be studied and consulted by all physicians who ever come in contact with the mentally unsound or who may be called upon to testify in court on psychiatric problems. It is a concise and excellent exposition of the subject, a veritable *multum in parvo* in one branch of forensic medicine.

JORDAN: "BACTERIOLOGY"

A Textbook of General Bacteriology. By Edwin O. Jordan, Ph. D. Fully Illustrated. Sixth Edition, Thoroughly Revised. Philadelphia: W. B. Saunders Company. 1918. Price $3.75.

Jordan's textbook on bacteriology has quickly become a great favorite as is evidenced by the necessity of issuing revised editions in such rapid sequence. In accordance with the constantly increasing knowledge concerning pathogenic bacteria, the present edition contains a virtually new chapter on the pneumococcus, this having been entirely rewritten; while that on meningococcus is extensively revised. We can only repeat what we have said before, that Jordan's book is one of those that present the subject of bacteria and other disease-producing microorganisms in an interesting and clear manner.

MALLORY AND WRIGHT: "PATHOLOGICAL TECHNIQUE"

Pathological Technique: A Practical Manual for Workers in Pathological Histology and Bacteriology including Directions for the Performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By Frank Burr Mallory, A. M., M. D., and James Homer Wright, A. M., M. D. Seventh Edition Revised and Enlarged With 181 Illustrations. Philadelphia: W. B. Saunders Company. 1918. Price $3.75.

Mallory and Wright's manual really is too well known to require extensive discussion. It is without a doubt *the* favorite with laboratory workers and those having to perform autopsies. The fact that a new edition is available will be glad news to many who have desired to secure this splendid manual. At any rate, it is a great source of satisfaction to the Reviewer who has for long relied on the book for much dependable information.

DE LEE: "OBSTETRICS"

The Principles and Practice of Obstetrics. By Joseph N. DeLee, A. M., M. D. With 949 Illustrations, 187 of Them in Colors. Third Edition, Thoroughly Revised. Philadelphia: The W. B. Saunders Company. 1918. Price $8.50.

A new edition of DeLee's textbook of obstetrics can not but be of general interest and necessarily must be welcome. There is nothing of moment to be added to earlier discussions of the work. This is one of the leading treatises on the subject and may be considered as presenting in an authoritative manner the best that is known concerning the principles and practice of obstetrics.

LIPPITT: "PERSONAL HYGIENE"

Personal Hygiene and Home Nursing: A Practical Text for Girls and Women for Home and School Use. By Louisa C. Lippitt, R. N. Illustrated. Yonkers-on-Hudson, New York: World Book Company. 1919. Price $1.28.

The purpose of Miss Lippitt's textbook is, to explain the means by which girls and women may attain health and happiness in the present and lay the foundation for sane and vigorous lives in after years. In clearest terms it lays down practical instructions for the conduct of their daily lives. Not only are the rules set out, but, the reasons which underlie them are made clear. Directions are given for preventing the spread of infection from cases of communicable disease; and instructions are furnished for the care of oneself and one's family in cases of accident or sickness. The author has given adequate treatment to the ideas that she considers most helpful to lay readers, but, she has taken pains not to go too deeply into the scientific aspects of any subject. She has desired to keep the book rather brief and, for this reason, has introduced only those topics on

which women and girls seem particularly to need instruction.

There is, however, much more to this little book. It constitutes a splendid textbook for the home study of practical nurses and of those members of the families upon whom the nursing of relatives and friends so often devolves. The Reviewer has several such devoted women in mind who have asked him from time to time for books suitable for their information. It is to them that Miss Lippitt's book will appeal and to whom it will be of great value.

Finally, the closing chapter discussing the trained nurse is of interest and deserves to be promulgated widely. The author describes briefly the duties of the trained nurse to her patient, as also the duties of patient and family to the trained nurse. This chapter is one the contents of which should be impressed upon the laity by physicians employing nurses for their patients. Trained nurses often are treated carelessly or with disregard, with a culpable forgetfulness of their natural limitations and of the consideration that is due them.

"PRACTICAL MEDICINE SERIES"

Volume 7 of "The Practical Medicine Series" for 1918 is devoted to last year's literature on skin and venereal diseases, being edited by Oliver S. Ormsby and James Herbert Mitchell. The price of this volume separately is $1.40.

"The Practical Medicine Series" is published in 8 volumes per year, at a subscription price of $10.00 for the series. The reviews cover the entire field of medicine and surgery, each volume being complete on the subject of which it treats for the year prior to its publication. The series is issued by the Year Book Publishers, of Chicago.

"MEDICAL CLINICS OF NORTH AMERICA"

The September, 1918, number of "The Medical Clinics of North America" is the United States Army number, the contributors all being members of the medical corps of the United States Army.

Major-General Gorgas, the former Surgeon-General, contributes a paper on clinical research in a United States Army base hospital. The epidemics of pneumococcus infection, streptococcus infection, etc., that were observed in various camps, are discussed among others by Major Walter W. Hamburger, while many other important communications are to be found in the number.

"The Medical Clinics of North America" is published bi-monthly by The W. B. Saunders Company, of Philadelphia, the present issue being No. 2 of Vol. 2. The subscription price for six numbers per year is $10. This publication is an unusually meritorious one.

DELANO: "EXERCISE"

How Shall I Take Exercise and Set-Up? A Phyician's Analysis of the Why and Wherefor What's What and of What's Worth While in Exercise. With Illustrated Movements. By Samuel Delano, M. D. Boston: The Four Seas Company. 1918. Price $2.00.

A series of instructions for physical exercise, many of them being illustrated. The author properly differentiates between exercise in health and in ill health. He gives instructions how to acquire poise, how to remedy round shoulders, how to breathe—a matter in which the majority of people are woefully ignorant. There is much in this little book that might well be taken to heart by physicians, both for themselves and for their clients.

WEBSTER: "PAPER WORK, MEDICAL DEPARTMENT, U. S. ARMY"

Paper Work of The Medical Department of The United States Army: A Guide for Administrative Work. By Ralph W. Webster, M. D. Approved for Publication by Direction of The Surgeon General of the U. S. Army. Philadelphia: P. Blakiston's Son & Co. 1918. Price $5.00.

Although the great war fortunately has been brought to a happy close and most medical men in service are being returned to their civilian practices, an authoritative textbook dealing with the paper work of the medical department of the Army and offering a guide for the administrative work can not fail to be of interest and of benefit to all those who have been in active service. To others, also, the book comes rather as a revelation showing that the work of medical officers is not all comprised strictly in the practice of medicine,

surgery, hygiene and sanitation, but that the duties of the army medical officers are onerous and complex in many respects. We may even learn some practical lessons for our own every-day work and guidance, with suitable modifications, for attending to our civilian practice with more orderliness and to better advantage.

"THE NATIONAL STANDARD DISPENSATORY"

The National Standard Dispensatory. Containing the Natural History, Chemistry, Pharmacy, Actions, and Uses of Medicines. Including those recognized in the Pharmacopoeias of the United States, Great Britain, and Germany, With Numerous References to Other Pharmacopoeias. In Accordance with the Ninth Decennial Revision of the United States Pharmacopoeia. By Hobart Amory Hare, B. Sc., M. D., Charles Caspari, Jr., Ph. G., Phar. D., and Henry H. Rusby, M. D. Third Edition Enlarged and Thoroughly Revised. Philadelphia: Lea & Febiger. 1916. Price $9.50.

Although this edition (the third) of "The National Dispensatory" bears the copyright notice of 1916, it was published only a few months since and corresponds with the provisions and information of the ninth revision of the U. S. Pharmacopoeia.

Physicians are prone to forget the existence of these two important publications, namely "The National Standard Dispensatory" and "The U. S. Pharmacopoeia." They should study both much more fully than they often do. The recent publication of both works in new editions should provide a suitable occasion for this.

BROWNING: "BACTERIOLOGY"

Applied Bacteriology: Studies and Reviews of Some Present-Day Problems For the Laboratory Worker, The Clinician, and the Administrator. Edited by C. H. Browning, M. D., D. P. H. London: Oxford University Press. 1918. Price $2.50.

This little volume contains a collection of separate articles, partly by the author, partly by others, that have appeared in medical journals and other publications, while some have never been published. After the introductory chapter on "The Scope of Applied Bacteriology", there follows one on "The Diagnosis of 'Enterica' Infections by Bacteriological and Serological Methods". Further, a chapter on "The Use of Calibrated Pipettes in Serological Work". Of special interest is the chapter on the "Observation on the Diphtheria Group With Special Reference to the Recognition of Pathogenic Members" and that on "Studies on Antiseptics". These are but a few of the interesting chapters contained in this little volume that may be studied with practical benefit.

WARNSHUIS: "SURGICAL NURSING"

Principles of Surgical Nursing: A Guide to Modern Surgical Technic. By Frederick C. Warnshuis, M. D. With 255 Illustrations. Philadelphia: W. B. Saunders Company. 1918. Price $2.50.

A well written, beautifully printed and copiously illustrated book for the guidance of surgical nurses.

"QUIZ-COMPENDS"

A Compend of Genito-Urinary Diseases and Syphilis, Including Their Surgery and Treatment. By Charles S. Hirsch, M. D. Third Edition, Revised. With 59 illustrations. Philadelphia: P. Blakiston's Son & Company. 1918. Price $1.50 net.

A Compend of Genito-Urinary Diseases and Syphilis, Including Their Surgery and upon Prof. Joseph P. Remington's "Text-Book of Pharmacy", the United States Pharmacopeia IX and the National Formula IV. Ninth edition, revised and enlarged by Heber W. Youngken, Ph. G., Ph. D. Philadelphia: P. Blakiston's Son & Company. 1918. Price $1.50 net.

A Compend on Bacteriology Including Pathogenic Protozoa. By Robert L. Pitifield, M. D. Third edition with 4 plates and 82 other illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Price $1.25.

Condensed Queries Answered

While the editors make replies to these queries as they are able, they are very far from wishing to monopolize the stage and would be pleased to hear from any reader who can furnish further and better information. Moreover, we would urge those seeking advice to report their results, whether good or bad. In all cases please give the number of the query when writing anything concerning it. Positively no attention paid to anonymous letters.

Queries

QUERY 6412.—"Intestinal and vesical tuberculosis."

V. G. K., Michigan, desires assistance in the treatment of a case of tuberculosis of the bowels, and also of the bladder.

As you can readily understand, doctor, it is difficult to prescribe for your patient without having a much clearer idea of his condition. Naturally, treatment must be varied to meet changing requirements. So, here, when tuberculosis of the bladder complicates intestinal tuberculosis, it is safe to assume that the kidneys also are involved. The prognosis, therefore, is far from hopeful.

In all these cases, rest in bed and attention to the diet are of utmost importance; especially is this true when diarrhea is persistent. Moreover, the patient should avoid all mental or physical exertion and partake of only such nutrients as will be assimilated. It is also desirable to combine the greatest variety of those nutrients the physiological action of which will reduce secretion; in other words, those that have a tendency to constipate.

As you may be aware, properly prepared buttermilk or an active preparation of the bacillus bulgaricus added to ordinary milk may prove extremely useful. We would suggest bacillus-bugaricus bouillon or galactenzyme, in rather full doses, two or three times daily. In all these cases, guaiacol carbonate or creosote proves useful while intestinal antiseptics (sulphocarbolates compound) may be given in alternation.

Occasionally, it is essential to administer an opiate. Here, a combination of zinc and codeine proves most satisfactory —say, zinc sulphocarbolate, gr. 1; codeine sulphate, gr. 1-4; hyoscyamine sulphate, gr. 1-1000; strychnine sulphate, gr. 1-128.

In vesical tuberculosis, the essential features of treatment are: rest, proper diet, suitable clothing, fresh air, suitable medication, and freedom from worry. Creosote carbonate again is indicated, as is also hexamethylenamine, preferably in combination with acid sodium phosphate.

If pain and tenesmus are present, antispasmodics are indicated. Small doses of hyoscyamine may be given, in combination with the hexamethylenamine and acid sodium phosphate. If the zinc and codeine combination suggested above is being used, the hyoscyamine will, of course, be unnecessary.

Local treatment generally is of value. The present writer prefers a 4-percent boric-acid solution as a cleansing wash. If the bladder first is washed out with a very weak silver-nitrate solution, by means of a catheter and then a 10- to 25- percent solution of argyrol injected, very pronounced benefit usually results. The argyrol, though, may suitably be replaced by silver nucleinate.

—

QUERY 6413—"Indicanuria." E. O. L. Illinois, writes:

"What, in your opinion, is the significance of persistent indicanuria and what will cure it? I have had it for the past six months and it seems to resist every kind of treatment. I am, apparently, in good health, aside from a slight gastrointestinal disturbance and a neurasthenic tendency, which I have always had. My age is fifty; height, 5 ft. 11 in.; weight, 169 pounds. The x-ray shows ptosis of the hepatic flexure of the colon and a spastic condition of the descending colon. I have recently begun using an abdominal belt

for this condition. Examination of the urine, after an attack of acute indigestion, showed a few hyaline casts, but, repeated tests disclose no more, no albumin is present; the specific gravity is 1030 in early morning and between 1018 and 1010 throughout the day; reaction is highly acid. My blood pressure averages about 140, systolic. I have refrained from meat most of the summer, still, when I have partaken of it, the indicanuria is no worse. My bowels more often are loose rather than constipated.

"I have been using mineral oil, Bulgarian bacillus, various intestinal antiseptics, pancreatin, oxgall, secretogen, compound sodium glycocholate, and calomel. After a course of calomel, the indican lessens to a trace for a day or two, and it is the only drug which seems to influence the condition in the least. Some authorities say that the appearance of indican in the urine, up to 77 percent (taking the color of Fehling's solution as a standard), is not pathological, while others insist that indicanuria always is abnormal.

"Up to the present, I am convinced that worry over the condition has done me more harm than the condition itself. Can you help me out?"

As a matter of fact, doctor, indican can not always be regarded as evidencing the presence of a pathological condition, still, persistent indicanuria points toward intestinal indigestion, appendicitis, peritonitis or chronic enteritis. It always is present in some diseases of the liver and pancreas and invariably so in chronic constipation.

As you are aware, indican is the chromogen of indigo-blue and arises from the absorption, from the intestinal canal, of indol, itself a resultant from the decomposition of proteids. In health, indol is formed in but very small amounts, being one of the products of the bacterial putrefaction of albuminous compounds, increased under a diet rich in meats or animal food, these containing a large percentage of proteid elements.

It is true that the clinical importance of the presence of indican has been exaggerated by some; nevertheless, in our opinion, it is more likely, generally, to be underrated. Its persistent presence affords valuable evidence of excessive proteid decomposition in the presence of bacteria. Such putrefaction leads to disturbances in the liver, various forms of gastritis, and much more, and those conditions that only can be described as resulting from toxemia and autointoxication.

An increased output of indican can be observed in cases of intestinal obstruction, associated with atony, and in most intestinal disorders dependent upon a diminution of bile: also, where there is a deficiency of hydrochloric acid in the stomach. In those forms of dyspepsia in which the motor power of the stomach is impaired, indicanuria virtually always obtains.

Speaking broadly, indicanuria, therefore, usually is associated with gastrointestinal disorders, marked by flatulence (a positive evidence of bacterial growth) and nondigestion of fats. A very long train of symptoms—nervous, hepatic, and renal—have their origin in putrefactive processes in the intestine.

It is pointed out by Guiteras that the occasional presence of indican must not be regarded as distinctly pathogenic, yet, persistent indicanuria invariably affords a clew to the nature of the disease from which the patient suffers. Thus, a furred tongue, injected eyes, loss of appetite, headache, torpor, both mental and bodily, and so on, with or without tenderness over the liver and abdomen may occur without indicanuria, although, usually, they coexist with it.

We are just beginning to understand something more about the action of the internal secretions, and, in a man of fifty of a neurosthenic tendency and suffering from slight gastrointestinal disturbance, the presence of indican is not at all a matter of surprise.

Bear in mind, doctor, that, when there is ptosis of the hepatic flexure and a spastic condition of the descending colon, abdominal massage and proper exercises would seem advisable. Undoubtedly, also you should eat but very little red meat, while it is probable that very marked improvement will follow a course of sodium iodide, 10 grains in solution taken three times daily after meals. It might be well to initiate treatment with calomel, podophyllin, and bilein at night, followed by a laxative saline the next morning. For one week thereafter, some such combination as this: bilein, gr. 1-8; strychnine arsenate, gr. 1-128; pancreatin, gr. 1; sodium sulphocarbolate, grs. 2 1-2: soduim carbonate, grs. 2 1-2; one tablet to be taken an hour after

meals. Thereafter, begin with the sodium iodide.

—

QUERY 6414—"Sudden Death During Convalescence from Influenza." I. E. C., Quebec, Canada, desires our opinion in the matter presented in the following letter:

"On October 14, I was called to a patient of mine, a young woman, aged twenty-four, single, who was ill with the socalled Spanish influenza. Typical symptoms; temperature, 102° F.; pulse, 100; respiration, 20. On the 16th, the temperature rose to 103 degrees; pulse, 116; respiration, 28; and some 'rusty' sputum appeared. Breathing was very harsh over the base of the right upper lobe posteriorly, with some fine moist râles. Some crepitations were audible in the upper left lobe anteriorly. Definite blowing breathing developed over the base of the left upper lobe on the 18th, when the temperature went up to 105 degrees, the pulse to 118, respiration, to 30, and the patient was very delirious. There was little coughing and no expectoration. She was very cyanosed. She remained in this condition until the night of the 20th, when the crisis occurred, the temperature dropping to 98° F. in about ten hours. On the afternoon of the 23rd, a violent fit of coughing occurred, breathing became very rapid, and, the temperature rose to 102° F., but, receded to normal in about six hours. Nothing worthy of note occurred until the evening of the 27th, when the patient suddenly became very dyspneic and died in about ten minutes. At the time of my last visit, about eight hours earlier, her condition was perfect: temperature, 98 degrees, pulse 84, respiration 20, color good, and heart-sounds perfectly normal. The blowing breathing still was very marked over the area mentioned. My theory is that on the 23rd, when the cough and rapid breathing occurred, she had a pulmonary embolism of slight degree, with recovery, and that death resulted from a second, more extensive, one. What is your theory?"

It seems to us, doctor, that your explanation is a very plausible one and that, in all probability, it is quite acceptable. In conversation with physicians, we have heard of similar cases, more than once, in which the patients had virtually recovered from their influenza and then suddenly succumbed to an attack of —— —— whatever it may have been. Such distressing accidents occur without the slightest warning and, in the absence of a necropsy, it is exceedingly difficult to determine the cause.

It is different in the case of those patients who succumb to their influenzal pneumonia. In them, death is actually due to "drowning," as Doctor Richardson, of Boston, has put it.

If any readers of this department have cognizance of similar occurrences, the Query Editor would be glad to receive their reports, and, likewise, their opinions as to the cause of death.

—

QUERY 6415.—"Myxedema in a Baby?" C. L. K., Kansas, was recently called to see a 9-months-old child, a boy. About four weeks before, this little boy was afflicted with an eruption, which the attending physician pronounced "hives." The eruption grew worse and the case was diagnosed "measles," the family being quarantined. At about the same time, the baby's whole body—arms, legs, hands, and feet—began to swell, when the case was considered to be of a dropsical nature. "As the attending physician, after two weeks, seemed to be unable to afford any relief or reduce the swelling (attributing the symptoms, evidently, to some hepatic or gastric disturbance, if the medicines given were any criterion), I was called in by the father.

"I found the child, which was rather large for its age, lying quiet, occasionally emitting a 'grunt,' making but slight movements with head; with large, full face, but, not unintelligent; cheeks a ruddy red; a confluent measle-like eruption on the arms and slightly on the body; the skin on back and buttocks scaly and yellowish-brown, scrotum size of a duck's-egg, also considerably bronzed; the whole body, legs, arms, feet, and hands considerably swollen; a leathery skin that did not leave any dents upon pressure. After looking the boy carefully over, I decided it to be a case of myxedema, but, found difficulty in explaining the meaning of that word, without suggesting cretinism. I had never had a case like it before.

"After administering a brisk laxative and hydragog, which seemed to relieve the child considerably, I put him on desiccated thyroid gland, 1-3 grain at a dose, at first twice then three times a day, then 1 grain at one dose daily. After a week,

decided improvement set in and now, after a month, there have been no untoward symptoms or relapse, the boy still taking 1 grain of the gland daily.

"Question: Are there any prospects of an entire cure, and what treatment should best be followed?"

We dare not venture a diagnosis with our limited knowledge of conditions. Myxedema, as you know, rarely occurs in so young a child. Is there any possibility of congenital syphilis?

You do not give us any idea of the condition of the thyroid gland, neither does there seem to have been any prior anemia. What was the character of the eruption that was pronounced "hives"? Urticaria could not possibly resemble measles. It is just possible that this was a typical case of measles or even scarlet-fever, with involvement of the kidneys. On the other hand, you have reasonably good grounds for your diagnosis. Do not forget, however, that the whole train of pathological symptoms might be relieved by, and marked improvement follow, a course of laxatives and desiccated thyroid gland. Were this true myxedema, one would hardly expect very decided improvement within one week, as it occurred in this patient.

What is the child's condition at the present time? You merely say there have been no untoward symptoms or a relapse. Do we understand that the discoloration on the buttocks has disappeared and the leathery condition of the skin no longer obtains? Is there any eruption whatever? What about the facies? Is the expression bright or dull?

Give us all the light you can in this rather peculiar case, and, if possible, send us a photograph of the little patient. While myxedema must be thought of, we are not sure that this disease exists here. What was the condition of the child prior to the appearance of the eruption—the supposed "hives?" Was the child at the breast or fed artificially? Be sure and note the pulse rate.

In reply to the foregoing letter of ours, the Doctor wrote as follows:

"Regarding the case of supposed myxedema, I wish to add that congenital syphilis is not improbable, owing to the life-history of the mother and her father; but, I had this considered and, as I had read somewhere that myxedema brought on through syphilitic causes would yield only to antisyphilitic treatment and this case responding so quickly to the thyroid gland treatment, I excluded that factor.

"There was inactivity of the kidneys and bladder just before I was called, but, the hydragog cathartic I administered relieved these symptoms at once and the only further treatment given was the thyroid gland and arsenious acid. To obviate any eventual deleterious effects of the thyroid preparation, the latter was omitted after the first week. The gross conditions disappeared entirely within a week and no other symptoms have shown since, except a cold and cough the last two weeks, accompanied by otitis media, which latter was controlled with a boric-acid, glycerin, and alcohol solution. The condition of the child prior to this trouble was satisfactory, he being bright and playful, although he is large and has a rather large head. The child has been nursed by the mother, but, will be weaned this week, being now thirteen months of age. The discoloration of the back and buttocks and all swelling, also the leathery and scaly condition of the skin disappeared and there is no further eruption. The only eruption I saw on my first call was on the arm and of an erythematous nature, so I can not tell anything about the previous symptoms, except, for the statement of a lady attending the child, who has some experience with children, that she did not consider it measles or hives.